MACHINERY
FOR
WORKING WOOD,
LONDON, BERRY & ORTON,
PHILADELPHIA, PA., U. S. A.

1888.

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W. E. London. L. H. Berry. L. O. Orton.

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Illustrated Catalogue.

London, Berry & Orton,

FRANKLIN INSTITUTE

Atlantic Works,

Twenty-Second and Arch Streets,

Philadelphia, Pa., U. S. A.

Established 1869 for the Manufacture of

Machinery for Working Wood.

A

1888.

Press of
Times Printing House,
Philadelphia.

FRANKLIN INSTITUTE LIBRARY

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INTRODUCTORY.

THE ATLANTIC WORKS were founded in 1869 for the purpose of manufacturing Band Saws (which were at that time in their infancy) and a class of wood tools heavier, better constructed and more serviceable than any at that time on the market. We could refer you to some machines which have been in constant use for the past seventeen years and are still living testimony of their superiority over machines of much later construction.

So rapid have been the changes, owing to different character of work to be attained, on machines designed and constructed at these works, that during the seventeen years of their existence only one catalogue has been issued that attempted to give a full list of tools manufactured.

Heretofore the firm depended on descriptive circulars as a means of reaching their customers. This fills the bill while the number of machines manufactured is small, but when with different machines we reach into the hundreds, we feel it to be a duty to catalogue our standard machines, that they may be better filed for future reference.

We would specially call attention to the original designs and improvements we have made in Timber Planers, Matching, Mortising, Tenoning, Boring, Gaining, and Sawing Machinery of various weights and capacity, designed for all kinds of work—from the heavier car or boat building to the lightest cabinet work. Also Band Saw-Mills, Band-Resaws and small Band Saws that will handle any work, from the large log of the Pacific coast to the smallest fret work—full description of which will be found in their respective places.

To manufacturers of lumber we would call attention to the Band-Mill and its large percentage of saving over Circular and Gang-Saws. In the manufacture of lumber we solicit your correspondence in all matters pertaining thereunto.

With designs that are unequaled, patterns thoroughly tested, tools from the best manufacturers, complete system in our works, long experience and careful attention to business, we hope in the future to maintain the high reputation of our machinery already attained, and to merit a continuation of the very liberal patronage hitherto received.

London, Berry & Orton,

ATLANTIC WORKS,

Philadelphia, Pa.

W. E. LONDON. L. H. BERRY. L. O. ORTON.

To Correspondents.

In corresponding, please state clearly and explicitly the work for which the machinery is desired, in order to secure the most suitable machine for the purpose.

Details Supplied.—Each machine is furnished with tools complete, as specified in the description. Where machines are some distance from the works, it is desirable to have plenty of spare cutting tools in stock, such as planer knives, circular and band saw blades, auger, chisels and all perishable parts. This prevents the annoyance and loss caused by having a costly machine standing idle for want of what would have cost but a trifle in the first outlay, and an assurance that they will properly fit the machine.

Gearing.—In ordering gearing, the diameter, width of face, number of teeth, and size of hole should be given, and also the size and position of hub.

Saws.—When circular saws are wanted, state whether for cross cutting or ripping; give the diameter, size of hole, both for mandrel and pin, distance from centre to centre of mandrel hole and pin hole, gauge, and style of tooth required.

Band Saws.—Specify the length, width, what machine they are for, and whether or not they should be joined, filed and set; give gauge, whether Birmingham or American, or better still, in decimals of an inch, as shown on page 131.

Knives.—In ordering, lay the knife upon paper with the bevel side up. Mark around it, showing the exact size and position of the slots, making due allowance for the reduction in the size of the knife by wear. Give thickness and bevel. State the name of the builder of the machine, and also the number of knives to the set.

Pulleys.—State the diameter, width of face, exact size of bore wanted; also, whether the face should be flat or crowning.

Repairs.—In all cases, where practical, return the old parts; if not, describe the parts for repairs as explicitly as possible, and send sketches of the same to obviate liability of mistakes.

Boring Bits.—State the diameter and length of twist and shank respectively.

Forwarding.—Preferred routes of shipment should be designated, otherwise they will be forwarded by the cheapest and most expeditious.

Ordering.—To avoid mistakes, purchasers are particularly requested to give the size and symbol of machine; also page of the catalogue on which it is described or illustrated.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

International Exhibition,

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

Philadelphia, December 21st, 1876.

Report on Awards.

Product, **BAND-SAW AND WOOD-CUTTING MACHINERY.**

Name and address of Exhibitor, RICHARDS, LONDON & KELLEY,
PHILADELPHIA, PA., U. S. A.

The undersigned, having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz.:

For great excellence of construction, simplicity, and solidity of parts. Also, for power of machines and for points of ingenuity and originality of design, special mention is deserved for the introduction and practical application of band-saws for cutting timbers and resawing with power feed by friction wheels. All the machines exhibited are of the highest credit to the workmanship of the firm, and are all exceedingly well fitted for their intended purpose.

FELIX REIFER,
Signature of the Judge.

APPROVAL OF GROUP JUDGES.

JOHN ANDERSON,
GEORGE H. BLELOCK,
W. F. DURFEE,
C. A. ANGSTROM,
F. PERRIER,
AUG. GOBERT, fils.

A true copy of the record.

FRANCIS A. WALKER,
Chief of the Bureau of Award.

[SEAL.]

Given by authority of the United States Centennial Commission.

A. T. GOSHORN,
Director-General.

J. L. CAMPBELL,
Secretary.

J. R. HAWLEY,
President.

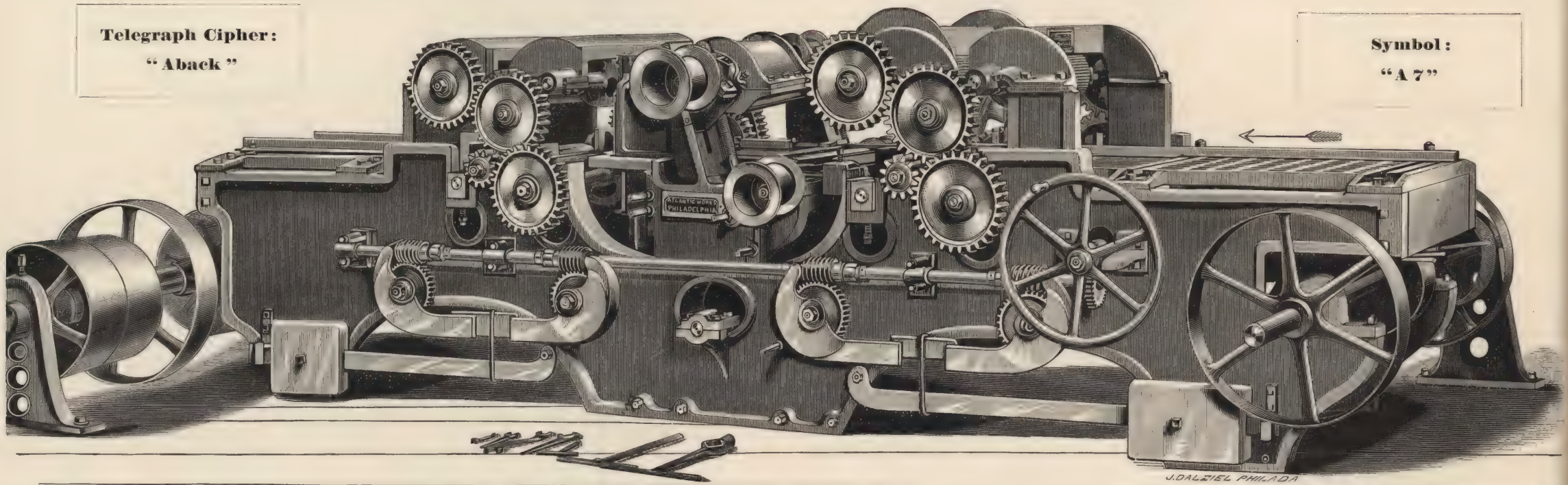
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London, Berry & Orton,

ATLANTIC WORKS. Philadelphia.

Telegraph Cipher:
"Aback"

Symbol:
"A 7"



Extra Heavy Timber Planing Machine.

Will plane two sides 28 inches wide, 12 inches thick.

Will plane four sides 16 inches wide, 12 inches thick.

Construction.—It is a large, heavy, powerful machine of about eight tons weight. The under cylinder is placed on a slide, so as to be brought outside the frame while sharpening or setting cutters. All cutter heads are in the centre of the machine, with four heavy and strongly geared feed rolls, both before and after them, and clustered together in as short a space as possible to assure square work. The lower side is planed first, so that a smooth and true surface is prepared for the timber to move on while the other three sides are being planed.

Cylinders.—The upper and lower cutter heads are made of *solid, forged crucible steel*, journals and head in one piece, either for three or four knives, as desired, slotted on all sides for square head bolts. Pulleys are made with flange on each edge and fitted with *taper* to cutter head, followed up with right or left hand nut, as required.

Side Spindles are made of forged cast steel, fitted with the bearings all arranged on one casting, so that bevel work can be done with either or both side heads at the same time.

Feed Rolls are eight in number, 8 inches in diameter. Each roll is driven with a gear *12 inches in diameter*, making the strain much less on the *teeth* than when both gear and roll are of the same diameter. Our *peculiar construction* of expansion gives us this privilege, and is not found on any other make of machine. The rolls are held parallel by a shaft that extends across the machine, with an arm fastened to each, and which connects to the upper roll frame. The upper rolls are raised or lowered by power, and consumes but one minute to raise them from one inch to twelve inches.

Feed has three changes, 20, 25 and 30 feet lineal per minute.

Lumber companies, by employing this machine, can furnish hard or Southern pine, planed and ready for use, at considerable advance on the price of rough lumber, and besides save expense in transporting.

Machines can be seen running in a great many of the railroad and private car-shops of this and foreign countries.

Details supplied.—One set of knives for each cutter head, and a full set of wrenches.

Tight and Loose Pulleys, 16 inches diameter, 10 inches face, should make 850 revolutions per minute.

REFERENCES.

WE have given in another place many testimonials about the performance of our Band Sawing Machinery, but in regard to the wider subject of Car Tools we have thought better to give the names of representative men upon leading Railroad Companies where our tools are in use. We have the pleasure of referring, by permission, to

Enoch Lewis, Purchasing Agent, Pennsylvania R. R. Co., Philadelphia, Pa.

Allison Manufacturing Co., Philadelphia, Pa.

W. C. De Armond, Purchasing Agent, Norfolk & Western R. R. Co., Philadelphia, Pa.

S. B. Haupt, Superintendent Motive Power, Norfolk & Western R. R. Co., Roanoke, Va.

H. Wallis, Mechanical Superintendent, Grand Trunk Railway of Canada, Montreal, Quebec.

A. Manvel, General Manager, St. Paul, Minneapolis & Manitoba Railway Co., St. Paul, Minn.

W. Mullins, General Purchasing Agent, Pennsylvania Co., Pittsburgh, Pa.

William Irving, General Purchasing Agent, Chicago, Burlington & Quincy R. R., Chicago, Ill.

E. E. Barney, Superintendent Barney & Smith Manufacturing Co., Dayton, O.

Haskell & Barker Car Co., Michigan City, Ind.

J. M. Wallis, Superintendent Motive Power, Philadelphia, Wilmington & Baltimore R. R., Philadelphia, Pa.

Lafayette Car Co., Lafayette, Ind.

Tredegar Co., Richmond, Va.

G. W. Demarest, General Foreman, Northern Central Railway Co., Baltimore, Md.

T. A. Bissell, Manager, Wagner Palace Car Co., Buffalo, N. Y.

John L. Gill, Consulting Engineer, No. 108 South Sixth Street, Philadelphia, Pa.

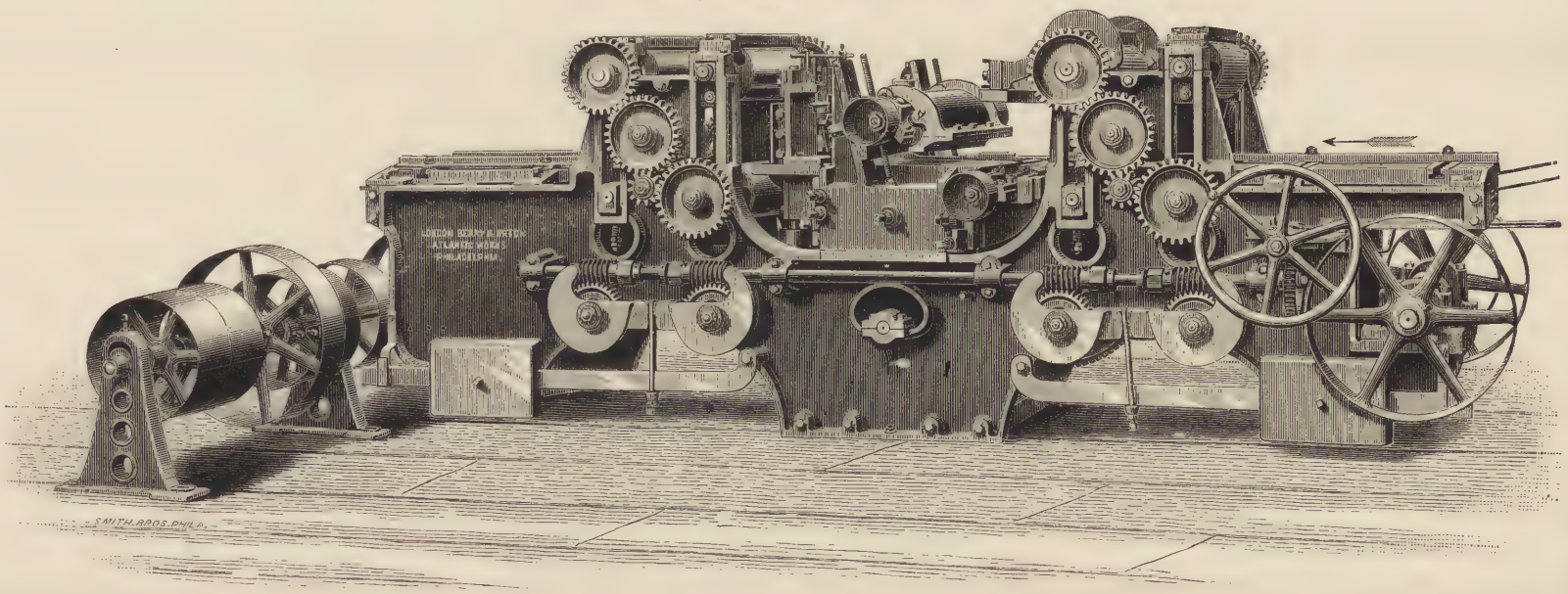
H. Middleton, Superintendent of Machinery, Louisville & Nashville R. R. Co., Louisville, Ky.

W. C. Alderson, Purchasing Agent, Lehigh Valley R. R. Co., Philadelphia, Pa.

AND MANY OTHERS TO WHOM WE MIGHT REFER.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

Telegraph Cipher, "Abet."



A^6 Eight Roll Timber Planing Machine.

To work Two Sides, 24 by 8 Inches. To work Four Sides, 14 by 8 Inches.

A^6 Eight Roll Timber Planing Machine.

Construction.—The arrangement of rolls and cutter-heads are similar to those of A 7. The upper, lower and side heads are in as close proximity to each other as is practicable. The under side of the timber is planed first, thus making a planed surface to gauge from, and insuring square work under all circumstances.

Cutter-Heads are made from the best crucible-steel forgings. All four sides are slotted for bolts. The lower cylinder is mounted on a slide, and can be drawn out at the side of the machine to facilitate setting and sharpening the cutters. It can also be raised or lowered to regulate the amount of material to be removed.

Pressure Bars are of the latest and most improved pattern, and will swing entirely clear of the cutter-heads, when so desired, for adjusting or sharpening the cutters.

Feed Rollers, eight in number, and each 8 inches in diameter, are all strongly driven through 10-inch gears, keyed to each shaft and followed up with a nut. The Upper Rolls are at all times held rigid and in perfect alignment with their mates, and can be raised or lowered either by hand or power.

Matcher Spindles are large, each carried in three bearings, and can be swiveled for beveled work. They are driven by our improved method of belting, reducing the wear of belts, and power to drive to a minimum.

Capacity.—Will work two sides 24 inches wide and 8 inches thick, or will work four sides 14 inches wide and 8 inches thick.

Details Furnished.—One set of knives for each cutter-head, one set of Shimer matcher-heads, with two set of cutters; a full set of wrenches and countershafts.

Speed.—Tight and loose pulleys are 16 inches diameter, 8 inches face, and should make 850 revolutions a minute.

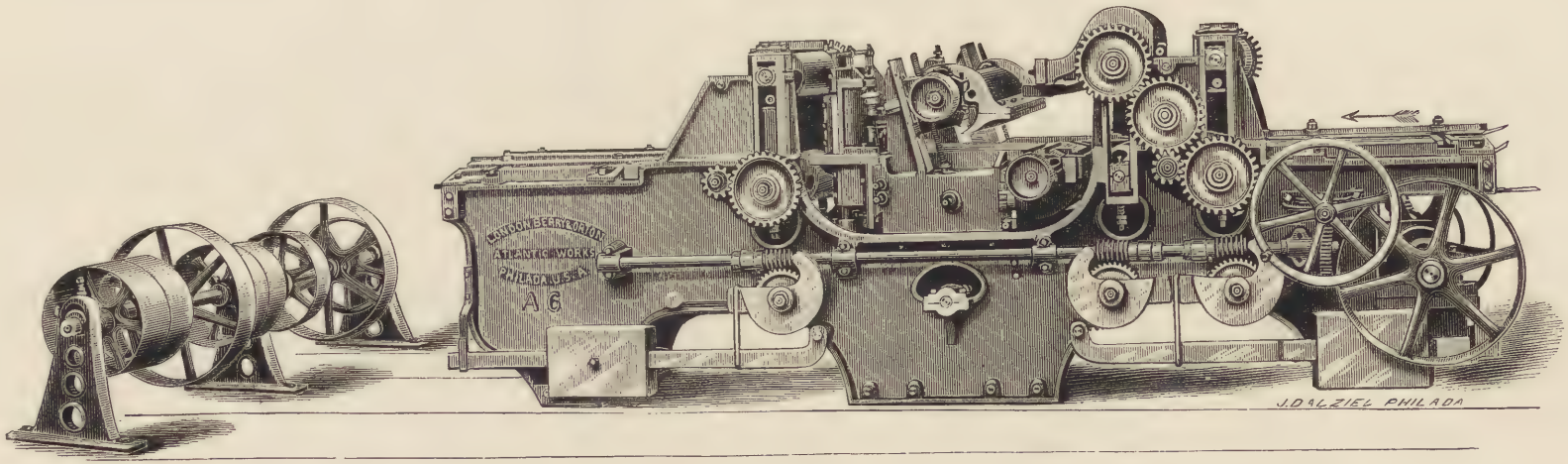
Weight of machine, complete, 8,600 pounds.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

Telegraph Cipher, "Abettor."



A^6 Six Roll Timber Planing Machine.

To work Two Sides, 24 by 8 Inches. To work Four Sides, 14 by 8 Inches.

A^6 Six Roll Timber Planing Machine.

Construction.—The engraving on the opposite page represents our improved heavy six-roll timber planing machine, specially adapted for heavy work, such as car-sills and bridge timber, and may be used on surfacing and matching with equal advantage and convenience. The machine is long, giving great length of belts. All cutter-heads are placed in as close proximity to each other as practicable. The under side is planed first, giving a plane surface to gauge from and insuring square work under all circumstances. Lumber varying 1½ inches in thickness may be worked without changing the position of either feeding-rolls or pressure-bars.

Cutter-Heads are made from the best forged crucible-steel, all four sides are slotted for bolts, both upper and lower cutter-heads are belted at both ends. The lower one is mounted on a slide and can be drawn out at the side of the machine to facilitate setting and sharpening the cutters. It can also be raised or lowered to regulate the amount of material to be removed.

Feed-Rolls.—The six feed-rolls are eight inches in diameter and placed two pair in front and one pair behind the cutter-heads, making the feed strong and powerful.

Side Cutter-Heads are mounted on heavy spindles, each carried in three bearings, and can be set at an angle for beveled work. They are driven by our improved method of belting, reducing the wear of belts, and power to drive to a minimum.

Capacity will work two sides twenty-four inches wide and eight inches thick, or four sides fourteen inches wide and eight inches thick.

Details Furnished.—One set of knives for each cutter-head; one set of Shimer matcher-heads with two sets of cutters, a full set of wrenches and countershaft.

Speed.—Tight and loose pulleys are sixteen inches in diameter, eight inches face, and should make eight hundred and fifty revolutions per minute.

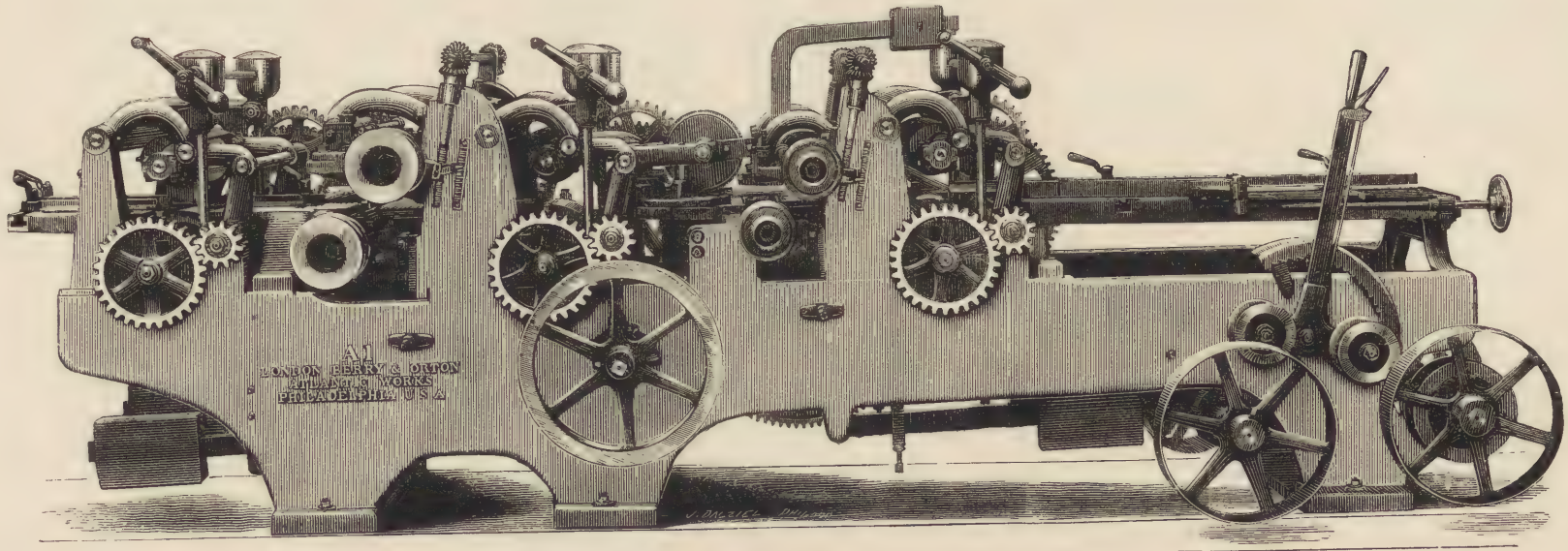
Weight of machine complete, 8,060 lbs.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

Telegraph Cipher, to Work Four Sides, "Abaft."
" " " " Three " "Abandon."



A[1] Fast Feed Flooring Machine.

A¹ Fast Feed Flooring Machine.

The engraving on the opposite page represents our new (A One) fast feed flooring machine, designed for mills doing a large amount of business, and especially those who desire to do a much better quality of planing, matching and beading than is usually done, and, at the same time, increase the amount planed in a given time.

Feed Rolls.—There are six feed rolls; the three upper are 6 inches, and the three lower, 12 inches in diameter. By this arrangement we secure an easy entering and leaving of the board, as it passes in and out of the rolls, thereby doing away with ridges sometimes seen on lumber, especially when one board does not follow close to the one preceding it. The upper rolls are mounted in swinging frames, that extend across the machine, holding them parallel to the lower rolls, and also supporting the expansion gear without the aid of studs or other objectionable traps; at the same time keeping the centres of the gears the same distance apart, whether working on thin or thick lumber. In raising the upper rolls, they always keep directly over the centre of the lower ones. By reference to the cut, it be will seen that the lumber is in full view of the operator while passing through each set of rolls.

Top and Bottom Cutter-Heads.—Both top and bottom heads are made from solid forged crucible-steel, slotted and lipped on all four sides for bolts, so as to admit the use of moulding or beading cutters. Cylinder pulleys are flanged and made heavy, to assure a steady movement of the cutters; all cylinder pulleys are fitted on with a taper, followed with a nut; this assures running true, and an easy removal. The journal boxes for cutter-heads are strongly connected together, and raised or lowered by means of screws and connecting gearing.

Pressure Bars.—The receiving pressure bar is pivoted so as to swing clear of the cutters, and be entirely out of the way in sharpening or adjusting the same. The leading-out bar is so arranged that it is raised or lowered at both ends at the same time, keeping it at all times parallel to the bed; this bar also makes pressure plate over the lower cutter-heads; both bars move simultaneously to or from the upper cutter-head, both ends of each bar being moved at the same operation.

Beading Cutter-Heads.—The beading in both top and bottom is done with separate cutter-heads of forged crucible-steel, slotted and lipped the entire length, so that knives for beading, working novelty siding, making two floor boards of one piece, can be located at any desired point. The lower beading cutter-heads—as is the case with the lower surfacing cutter-heads—are mounted on a slide, so that they can be drawn out on the working side of the machine, thereby giving the operator easy access to them. The lower beading cutter-head has an adjustment across the machine, so as to enable an easy setting of the lower bead with the bead on the upper side.

Side Cutting-Heads.—The side cutting-heads are moved with independent screws, and will move entirely across the machine; they are fitted with independent weighted rolls, that always hold the board firmly down near each edge. Shimer heads are furnished with each machine.

Arrangement of Parts.—It will be noticed by referring to the cut, we have placed the beading cutter-heads and matcher-heads between the first and second pair of rolls; this has been done for several reasons, which we now submit for consideration. First, we take the beading knives from the surfacing cutter-heads, so as to have four knives instead of two on each head; this helps to do rapid work. Second, if the beading cutters are placed after the surfacing cutting-heads, it always makes a rough or ragged bead, which looks badly, and when painted, still worse. Third, when the matching heads are located after the surfacing cutting-heads, and the board held as firmly as it should be, to assure good matching and beading, the one pair of smooth rolls are unable to feed or deliver the board from the machine. Fourth, if the gauges are set a little too tight when matching, the lumber shows the marks, which is certainly very objectionable.

It will readily be seen that all these objections are overcome by placing the beading and matching-heads as we have, between the first and second rolls. Both first and second top rolls are fluted, so we have abundance of feed power. The board being beaded before it is surfaced, gives us a clean, smooth bead. When matching, we can hold the work as firmly as desired without injury; and lastly, we have accomplished the great advantage of having four knives on each of our surfacing cutting-heads, instead of two. Now, if we can succeed in making each knife do its work, we see no reason why the feed of the machine should not be doubled.

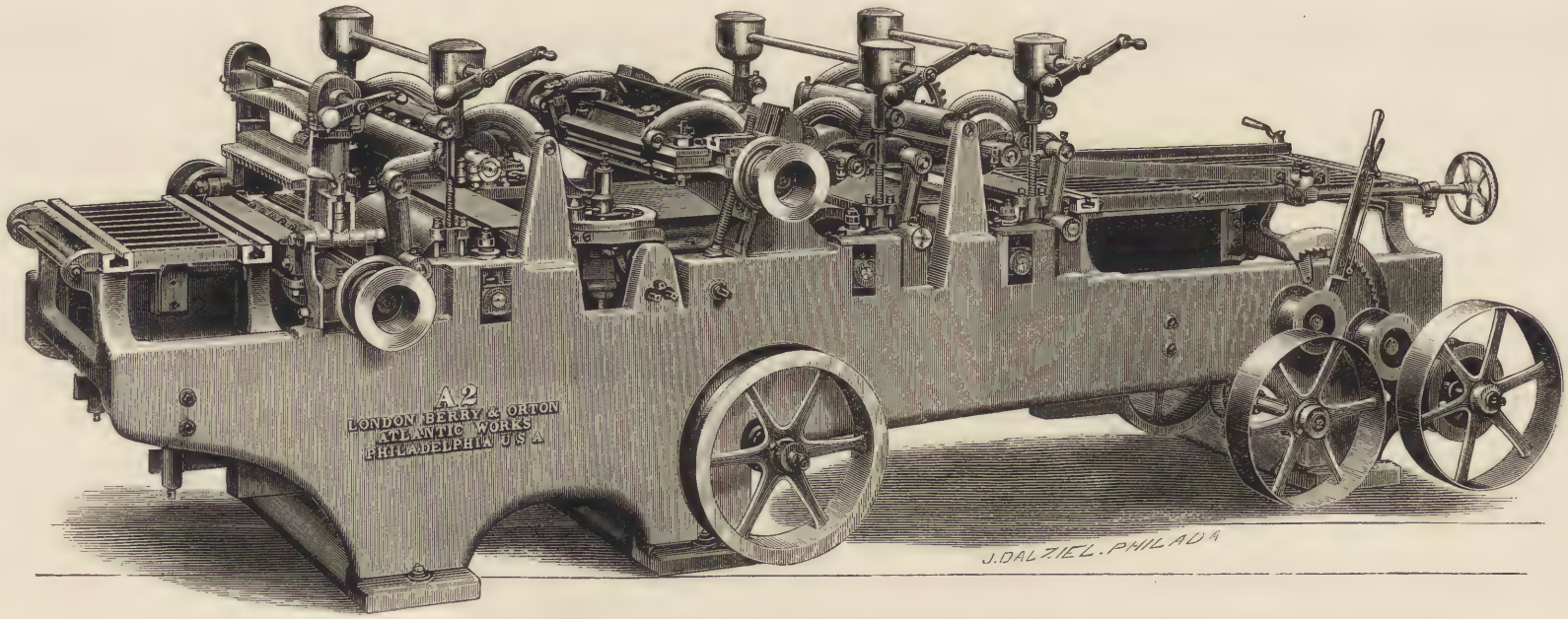
This we have accomplished, and now stand ready to guarantee to parties who mean business, that we will make better flooring at 100 lineal feet feed per minute than you are now doing at from 50 feet to 60 feet.

Further particulars see page 21.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

Telegraph Cipher, Four Sides, "Abash."
" " Three " "Abate."



Combined Planing and Matching Machine, to work 26 Inches Wide, 6 Inches Thick.

Improved
Combined Planing and Matching Machine.

Construction.—This machine is built on a long substantial frame of cast-iron, planed at all joints and thoroughly bolted together with turned bolts, the metal being distributed so as to give the greatest strength where subjected to the heaviest strains. The arrangement of parts is the same as in general use. Great care has been taken to have all parts handy, easily accessible and convenient to the operator. In fact, strength, durability and simplicity have been our main study in its construction. Planes 26 inches wide and 6 inches thick; will match the full width of machine.

Cylinders.—The cutter-heads are made from the best crucible, forged cast-steel, all four sides are slotted for bolts, bearings are six diameters in length and mounted in the best Babbitt metal. Each head is fitted with a full set of knives, bolts are made of the best refined wrought-iron or steel as preferred.

Feed Rolls.—Has six feed rolls, the lower are 12 inches and the upper 6 inches in diameter, making them equal to six rolls each 9 inches in diameter. We have found this a great improvement, as it not only gives the lumber a better base, but causes it to enter and leave each pair of rolls with greater ease and smoothness. The upper rolls are carried in a swinging frame which holds them parallel and does away with all sliding friction of boxes, while they move up or down directly over the centre of the lower ones, making the finest arrangement of feed rolls in existence.

Matchers.—Each bracket is fitted with a screw by which it can be moved at will across the machine, and by turning one other screw with the same wrench that moves the others, both brackets are firmly set to the slide and all screws held firmly. This is a great improvement.

Pressure Bars.—The top cutter-head is provided with our improved pressure bars which are set to or from the head by means of a double eccentric, which, while they can be set at any desired distance from the knives, limits their movement when moved towards them, rendering it impossible to get them into the cutters.

Feed.—It has three changes, and is at all times under the control of the operator.

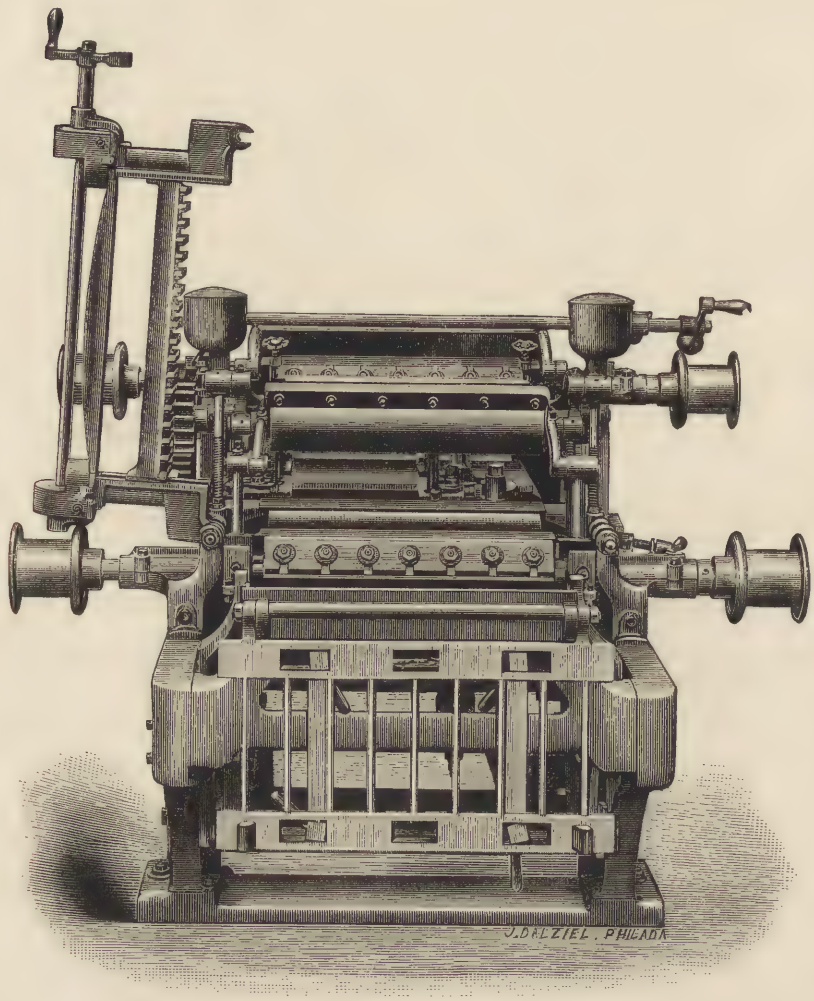
Gearing.—Each roll is heavily geared, the gear wheels being one and one-half times the diameter of the rolls. In all cases the gears are on the gauge side of the machine, and the expansion gear is on the front side of the roll, so that the driving pressure is always downward, causing more pressure on the gauge side, which is thought by some experts to be desirable.

To purchasers: We would solicit a thorough examination of this machine before placing your orders.

Weight, 8,700 pounds.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.



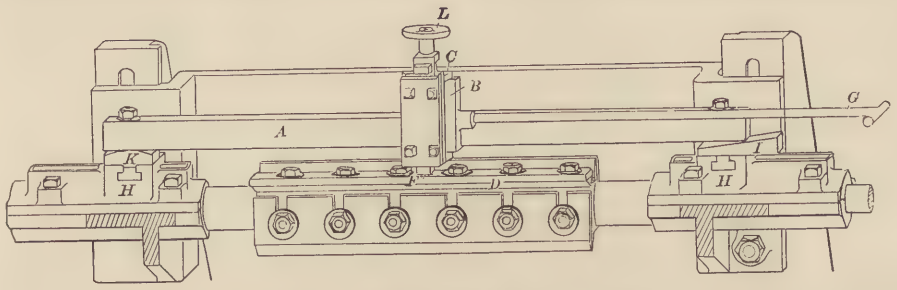
END VIEW OF A².

DESCRIPTION.

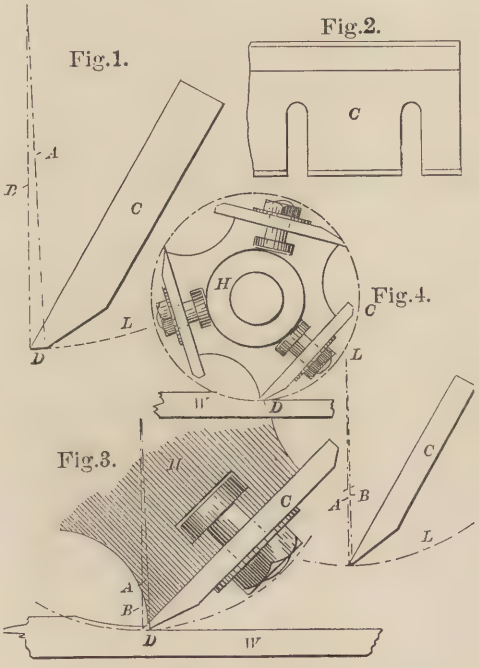
The above illustration represents the back or rear end of our latest construction of Planing and Matching Machine, showing how easily the lower cylinder is exposed for setting or sharpening the cutters, without disturbing the framing of the machine. Although well shown in the cut, this part of the machine must be seen to be appreciated.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



The cuts on this page are designed to illustrate our new and patented improvement for making all the cutters on a cylinder do an equal proportion of the work, thereby to accomplish a greater quantity of improved work in a given time than is possible with the ordinary bit, working under the same conditions; also to provide a perfect, more durable and stronger edge for the cutters than ever before known or used, and to provide cutters, the cutting edges of which can be made parallel with the axis of rotation, and true to the surface of the board to be planed. We attain these objects by making the back part of the bit (which follows and supports the cutting edge) of circular form, to conform to the radius of the cylinder; a full description of the operation is here given.



The cylinder boxes are provided with two square bosses (H-H), to support the bar A. The bar A rests at one end on wedge I, and at the other, on the rounded bearing piece K, so that it can be adjusted parallel with the axis of the cylinder. On the bar A is mounted a slide B, which can be moved across the machine by the rod and handle G. The slide B carries a vertical slide C, in which the stone F is placed. This slide C can be adjusted up or down by a screw operated by the hand-wheel L. In operation, the cylinder D is set in motion, and when it is at full speed the stone F is moved back and forth across the machine until the cylinder is truly ground. For practical use the space between lines A and B, Fig. 1, at D, should not be more than one-sixty-fourth of an inch.

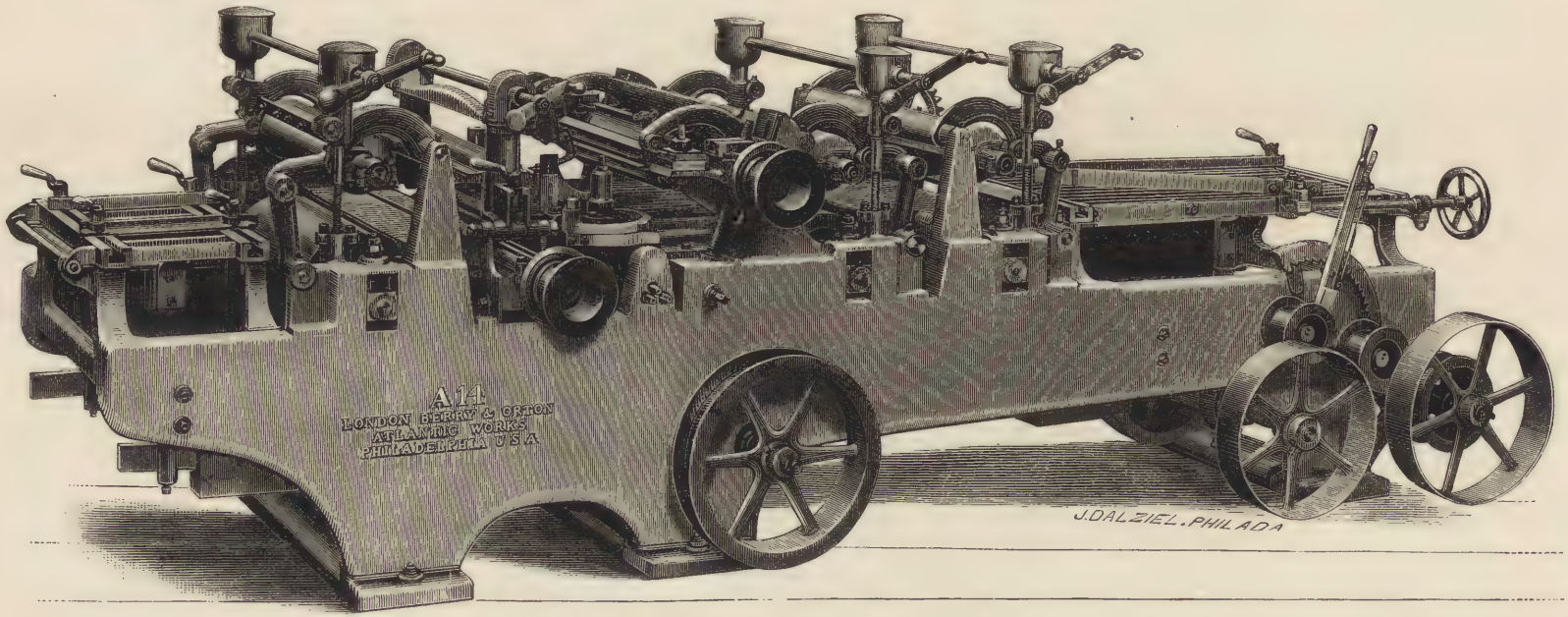
We have practically demonstrated at our works, in Philadelphia, that a cylinder 6½ in. in diameter, and carrying four cutters and making 3,400 revolutions per minute, would stand a lineal feed of 150 ft. per minute, without showing the marks of the cutters on the surface planed.

All planing, matching and surfacing machines made at the Atlantic Works after this date will have the caps on cylinder boxes arranged to use this grinding device, and purchasers of machines will be entitled to its use without paying royalty.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

Telegraph Cipher A14, to Work Four Sides, "Abating."	Telegraph Cipher A9, to work Four Sides, "Abbey."
" " " " " Three " "Abbess."	" " " " " Three " "Abduct."



A14 Rapid Feed Flooring Machine.

A9 Rapid Feed Flooring Machine.

Rapid Feed Flooring Machines.

The engraving on the opposite page represents our rapid feed flooring machines, which are made in two sizes to work stock, 14 inches wide 6 inches thick, or 9 inches wide 6 inches thick. The only difference is in the width of machine. The frame is long, affording belts of extra length. All joints are planed and thoroughly bolted together with turned bolts.

The under cutter-head will be placed at the end of the machine or between the matches and last pair of rolls as specified. If not specified it will be placed in the latter place, so that the last board will be delivered clear of the machine.

The arrangement of parts are the same as in general use, and will not need further explanation.

Feed Rolls, six in number, are strongly driven by gears one and one-half the diameter of the roll, and located, as are all gears, on the back side of the machine, leaving the front or working side free from all obstructions. The lower rolls are 12 inches in diameter, and supported in long heavy bearings which can be easily adjusted.

The upper ones are mounted in swinging frames that maintain a perpendicular line over the lower ones, and at the same time are held parallel, causing the weights on each side of the machine to act simultaneously, making the feed very strong and reliable.

Cutter-Heads are made of the best hammered crucible-steel, journals 2 inches in diameter, 12 inches long, mounted on the best Babbitt metal bearings, and driven at both ends by heavy flanged pulleys fitted to mandrel with taper, followed up with right or left hand as required.

Matcher Spindles are large in diameter and mounted on good substantial frames; each frame is moved by a screw across the machine, and when set, are both fastened to the slide on which they are mounted, by turning one binding screw which is outside the machine.

Pressure Bars.—The top cutter-head is provided with our improved pressure bars, which are set to or from the cutters by means of a double eccentric, and while they can be set at any desired distance from the cutters, it limits their movement when moved towards them, rendering it impossible to get them into the cylinder.

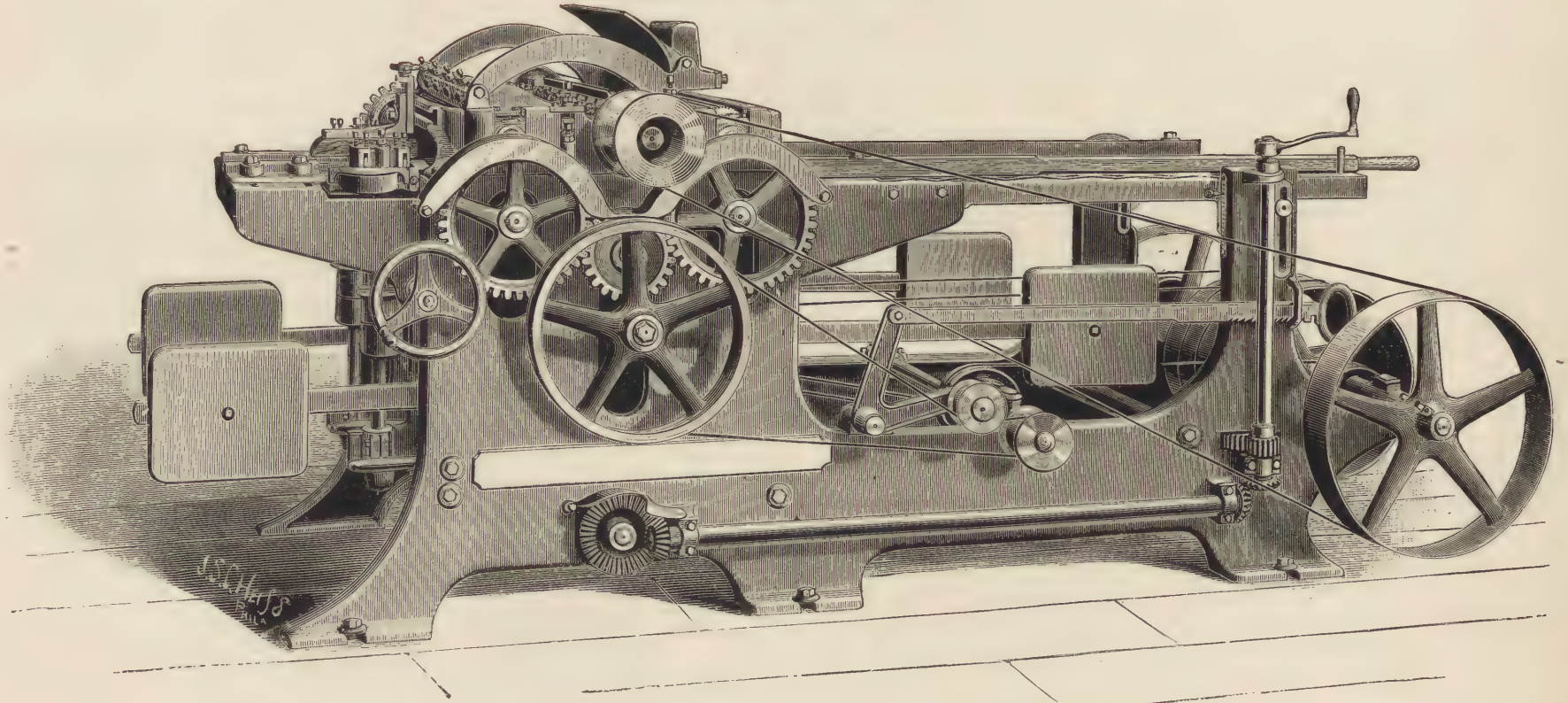
Details furnished.—One set of four knives with each cutter-head; one set of shimer matcher heads with two sets of cutters; a full set of wrenches.

Speed.—The tight and loose pulleys are 14 inches diameter, 7 in. face on the 14 in. machine, and 14 in. diameter 6 in. face on the 9 in. machine, and should make on either machine 800 revolutions per minute.

Weight of 14 inch machine, 7,500 pounds. Weight of 9 inch machine, 7,000 pounds.

London, Berry & Orton,
Atlantic Works, Philadelphia, Pa.

Telegraph Cipher, "Abhor."



No. 1 Planing and Matching Machine.

No. 1 Planing and Matching Machine.

To Plane 24 Inches Wide and 6 Inches Thick.

The cut illustrates our new No. 1 Planer and Matcher, constructed on the principal of a vertical movement of the bed, to which are attached the lower feed rolls, matcher head spindles, frames, guides, etc. In designing this machine our aim has been to make the strongest, most convenient and best of this style of machine now in use.

The cutter-head is made of forged steel, with four sides slotted for bolts, and it is driven by two belts, has pressure bars arranged to insure good work in surfacing, working flooring, novelty siding, beading, etc. The four feed rolls are 5½ inches in diameter, all driven by a simple system of gearing, with expansion to plane up to 6 inches in thickness. The pressure of rolls on lumber is by weighted levers, giving a positive and reliable feed, with change of speed for feed by means of cone pulleys. The matcher spindle frames are supported on a heavy adjustable bar, with independent screws to move each frame. The spindles are of large diameter and length, run in self-oiling boxes and steps, and are supported at lower end by a girt across the machine. Connected with this girt and the lower part of the matcher frames we apply a simple attachment that will in a moment, by a single movement, securely lock the matcher frames to the girt, and also fasten that end of the bed to the frame of the machine, making it rigid, and prevent all vibration. The matcher frames and spindles are *not dropped or swung down* to change from working flooring to surfacing; the change is made by removing the matcher heads from the spindles, thus leaving the matcher frames and spindles always in their working position, well supported, and keeping boxes and journals always in good condition.

The receiving end of the feed table is supported by a screw connected by gearing to the shafts for adjusting the bed, and has also a bolt passing across the frame, with hand wheel nut, which, with the means of fastening the parts of machine at the delivering end (as described above), gives a positively rigid machine without vibration, which will produce good work and prevent strain and wear. The machine will surface 24 inches in width, and up to 6 inches in thickness. Will surface and match up to 14 inches wide.

We furnish with each machine two 24-inch knives on top head; also six steel bolts with case-hardened finished nuts to fasten novelty knives, etc.; one pair of cast-steel matcher heads, with set of four solid matcher bits to work flooring, and necessary wrenches, belting and any style of knives extra at lowest prices. Countershaft has 12 x 6 fast and loose pulleys which should make 800 revolutions per minute. Weight, 3,800 pounds.

Belts required:

Two cutter head belts, 15 feet 6 in. long, 4 in. wide.
Two matcher head belts, 17 feet 2 in. long, 3 in. wide.
One feed belt, 8 feet 10 in. long, 3½ in. wide.
One feed belt, 7 feet 10 in. long, 3 in. wide.

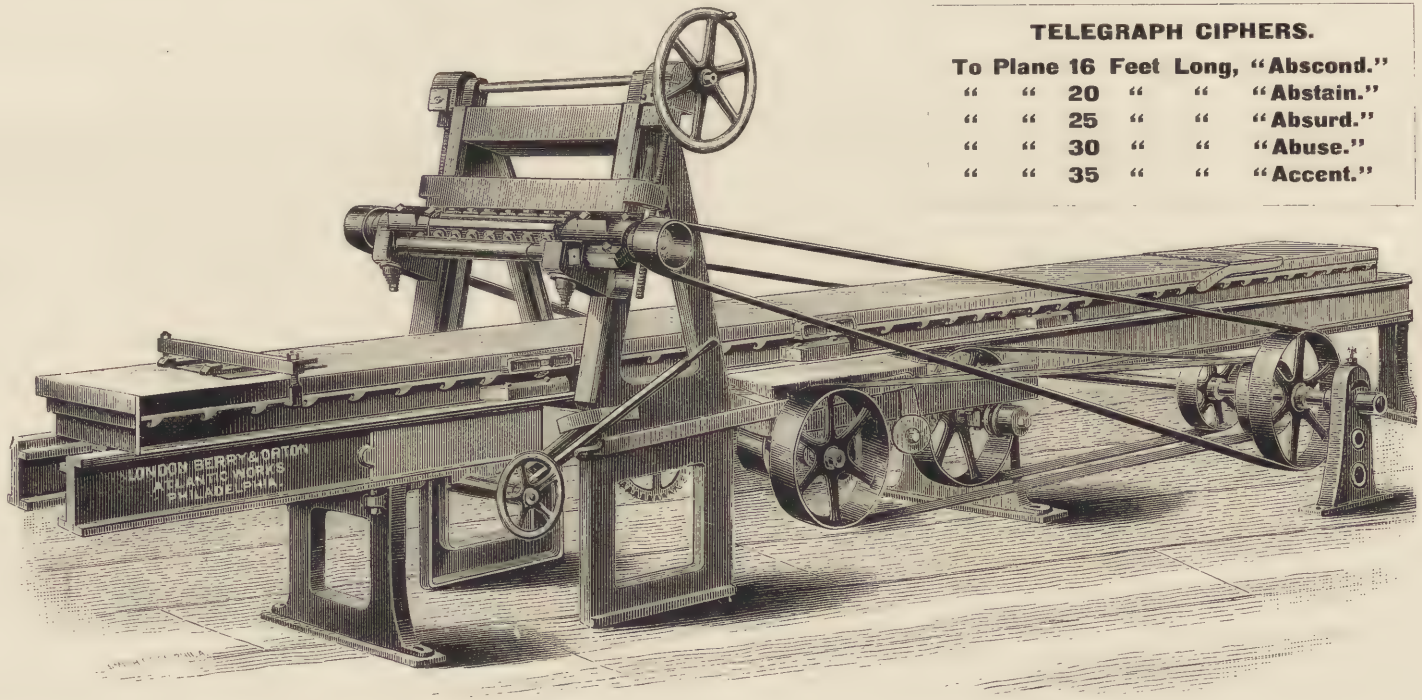
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

TELEGRAPH CIPHERS.

To Plane		16	Feet	Long,	"Abscond."
"	"	20	"	"	"Abstain."
"	"	25	"	"	"Absurd."
"	"	30	"	"	"Abuse."
"	"	35	"	"	"Accent."



Dimension Planing Machine.

To work 24 Inches Wide and 12 Inches Thick.

A[3] Heavy Dimension Planing Machine.

The engraving on the opposite page shows a central section of a Heavy Dimension Planing Machine, to plane 24 inches wide and 12 inches thick.

Construction.—It is a strong, massive frame, which carries a moving table on which the material to be operated is carried under a horizontal cutter-head, that is arranged so as to be raised or lowered to any desired thickness. For agricultural shops, and repair work in railway and car works, it will be found a most excellent machine, and one without a rival.

Cutter-Head is made from solid forged crucible steel, planed on all three sides, slotted for bolts, and strongly driven by pulleys at each end, fitted on with taper, followed up by right or left hand nuts as required.

Feed-Works are all mounted on the under side of the main frame and under the table, which protects them from shavings and dirt. They are arranged with our variable friction disc, and can, at the will of the operator, move the table from five to forty feet per minute, either way. Has also a quick return that can be used if desired.

Main-Frame is made in sections, and can be extended to any length required, and is so constructed that the way can be levelled with screws, and the machine kept at all times in line.

Tables are also made in sections which can be attached together as the length of lumber may require. Each section is made of iron, covered with wood, and can, at any time, be trued up by lowering the cutter-head and taking a light cut from the table.

Details Supplied.—One set of knives, a full set of wrenches and countershaft.

Speed.—Tight and loose pulleys are 14 inches diameter, 7 inches face, and should make 850 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton,

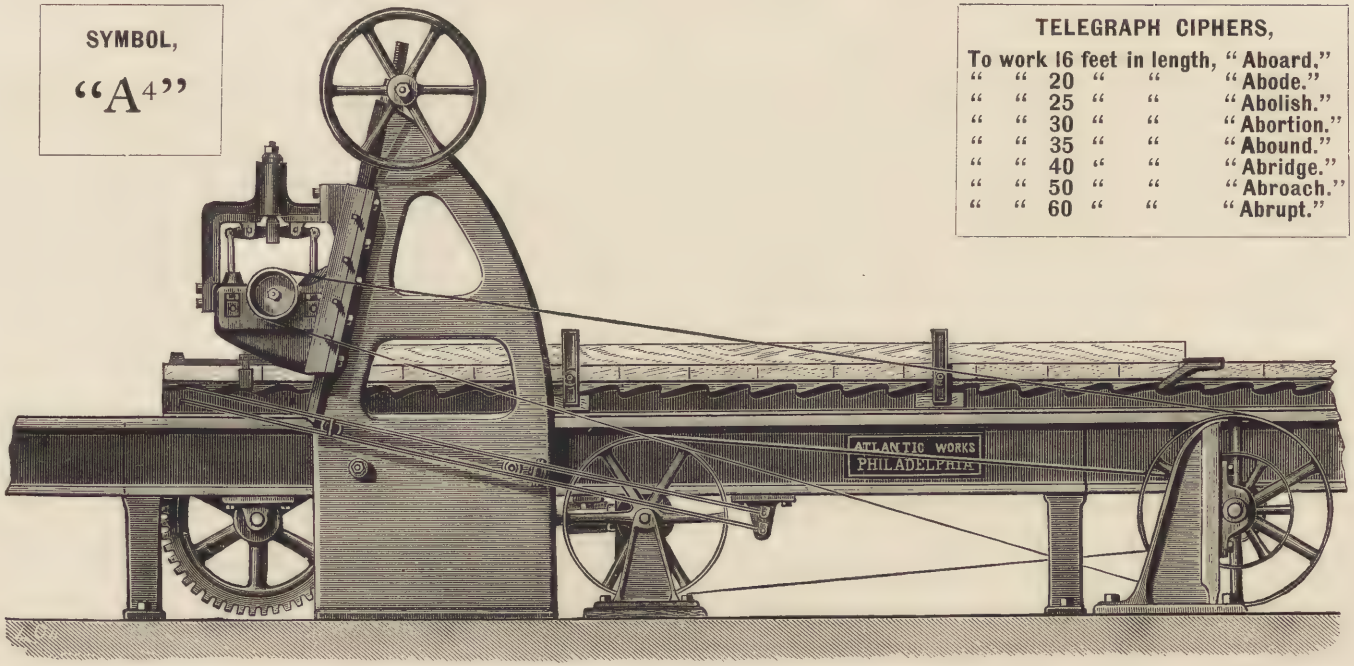
Atlantic Works. Philadelphia, Pa.

SYMBOL,

"A⁴"

TELEGRAPH CIPHERS,

To work 16 feet	in	length,		"Aboard."
" " 20	"	"		"Abode."
" " 25	"	"		"Abolish."
" " 30	"	"		"Abortion."
" " 35	"	"		"Abound."
" " 40	"	"		"Abridge."
" " 50	"	"		"Abroach."
" " 60	"	"		"Abrupt."



EXTRA HEAVY DIMENSION PLANING MACHINE.

To work any length, 28 inches wide, 18 inches thick.

A^4 Extra Heavy Dimension Planing Machines,

WITH FRAMING OF IRON.

The engraving shows a central section or partial view of an extra heavy Dimension Planing Machine, to plane lumber to 28 inches wide and 18 inches thick. These Machines are massive and strong, and in every way suited for planing large pieces at a rapid rate.

The cylinder has three knives, is made from solid forged crucible steel, slotted for bolts on all sides, and mounted in large, long Babbitted bearings, and is driven by a belt at each end, the aggregate width being 10 inches.

The framing is wholly of iron. The carriages are also made of iron covered with wood, and are made in separate sections, which can be attached together as the length of lumber may require, and when not in use can be run out of the way.

The main frame is also in sections, and can be extended if required, or when not in use can be removed in a few minutes to prevent obstruction. It is also so constructed that the ways can be levelled with screws, and the Machine kept at all times in line.

These Machines are from two to three times as strong as those commonly made, yet it is believed are no stronger than the work in many cases demands. They have been furnished to many of the principal railway companies and car works, and have always performed their work successfully.

The carriage movement is controlled by shifting belts, clutches not being safe for rapid movement with heavy carriages and large pieces.

These Machines are recommended for planing hard wood lumber of large size, and in any case where there is much to be cut away; they are, however, in all respects adapted for planing small pieces or boards as well, the strength required for heavy rough work being no impediment.

Details Furnished.—One set three knives, full set of wrenches, countershaft complete.

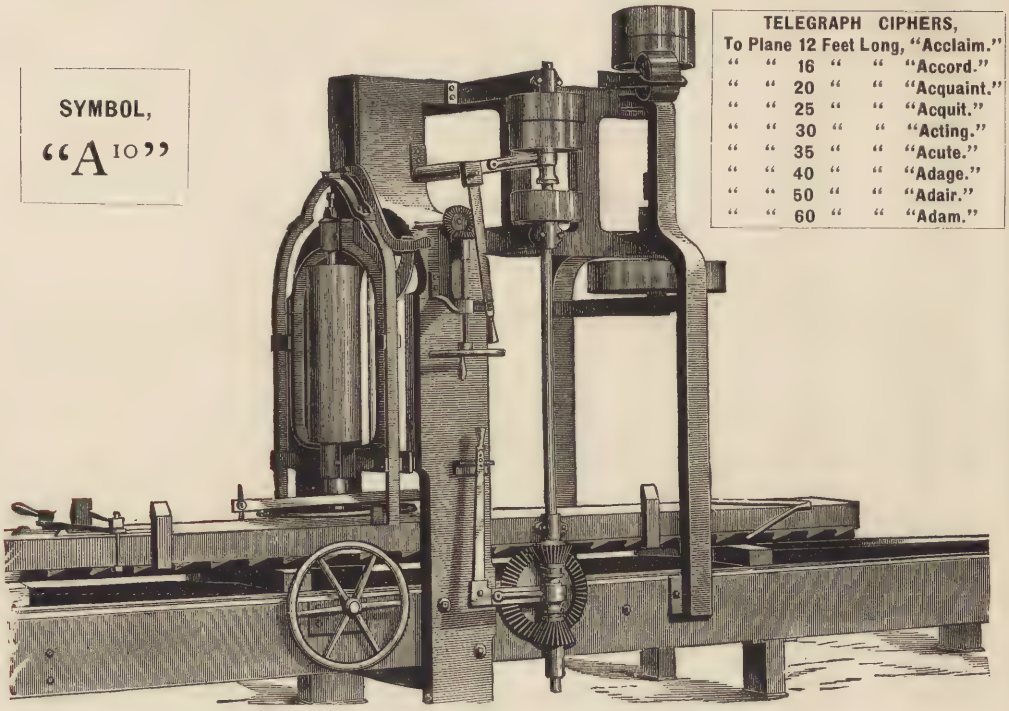
Speed.—Tight and loose pulleys are 16 inches diameter, 8 inches face, and should make 850 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

SYMBOL,
"A 10"

TELEGRAPH CIPHERS,				
To Plane 12 Feet Long,				"Acclaim."
"	"	16	"	" "Accord."
"	"	20	"	" "Acquaint."
"	"	25	"	" "Acquit."
"	"	30	"	" "Acting."
"	"	35	"	" "Acute."
"	"	40	"	" "Adage."
"	"	50	"	" "Adair."
"	"	60	"	" "Adam."



Traverse or "Daniel's" Planing Machine,

WITH FRAMING OF WOOD AND IRON.

The Machine shown above is constructed with the main frame and carriage of wood, but all the upper frame is iron.

The cutter-bar is made of wrought iron, and the main spindles are of steel, and all the working parts are strong and carefully fitted.

There are two rates of feeding, forward and back, besides a quick return movement. These movements are all controlled by the levers seen at the side, and give a perfect command over the carriage in planing hard or soft wood, or in heavy or light cutting.

There are screw clamps at the ends of the carriages, and the usual side clamps.

The Machine is made to plane 27 inches wide, the length being varied to suit the character of the work.

Details Supplied.—One set of cutters and a full set of wrenches.

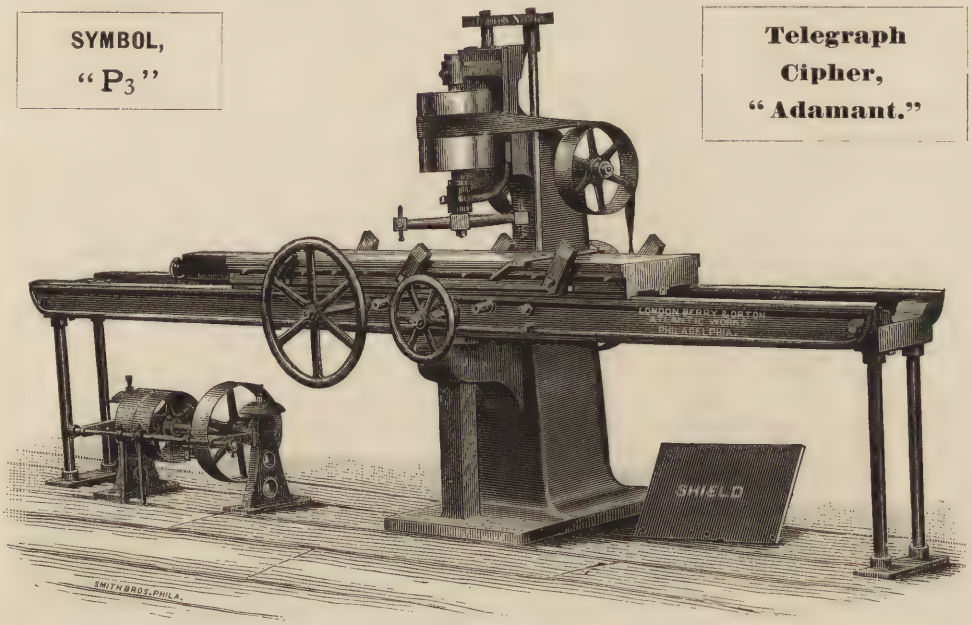
Speed.—Tight and loose pulleys are 14 inches diameter, 4½ inches face, and should make 400 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

SYMBOL,
"P_3"

Telegraph Cipher, "Adamant."



Small Traverse or "Daniel's" Planing Machine,

For Pattern Shop, to Feed by Hand.

The Machine shown above is intended for use in Pattern Shops, and in any case where the work is small and continually changing. The surfaces produced are perfectly true, and ready for gluing as they come from the Machine.

It planes 6 feet long, 15 inches wide, and 6 inches thick. The lumber is held by convenient screw clamps, which can be instantly changed for pieces of any size.

The feeding movement is performed by hand, and is in this way much more convenient than if operated by power.

The rate of feeding is fast or slow as may be required, and no time is lost in operating levers or other reversing gear.

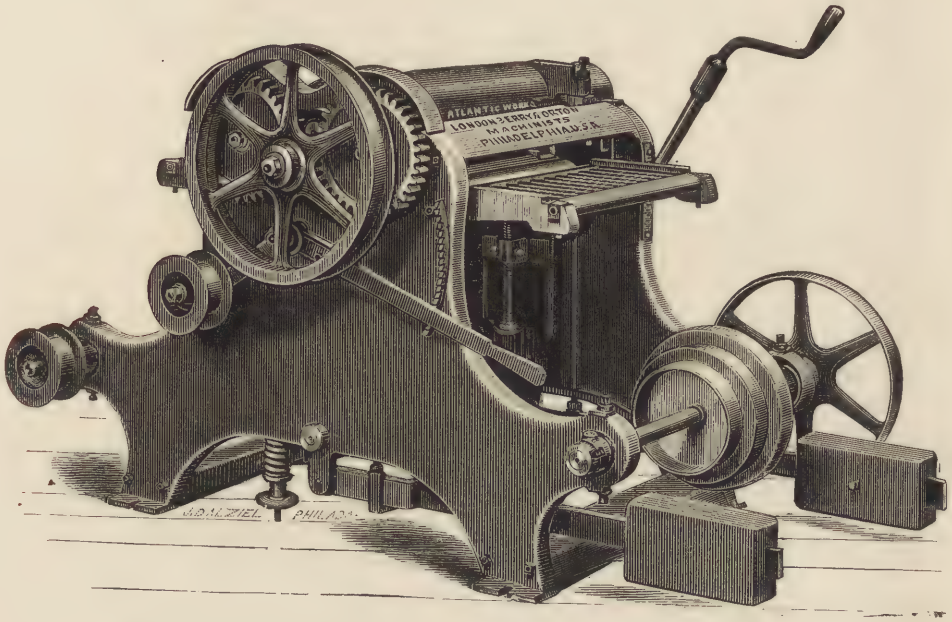
The cutter-bar is of wrought iron, and the spindle of steel.

These Machines are especially suited for pattern-making, and being low in price, soon return their cost in saving of time and expense, even when large Machines are at hand.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher, "Adept."



K¹ 20-inch Surface Planing Machine,

To Thickness, and Plane One Side.

Construction.—The Machine shown above planes 20 inches wide and and from 1/8 to 6 inches in thickness. It is very strong, compact, and considerably heavier than machines of the same class and capacity are usually made.

Cutter-Head is made from solid forged crucible steel, slotted for bolts, and driven at one end by pulley fitted on either taper followed up with a nut. It is mounted on the main frame in good substantial bearings, and remains in one position, the adjustment for thickness being made by raising or lowering the bed on which the lumber moves.

Pressure-Bars are placed both before and after the cutter-head, and are so arranged that all clipping at the ends of lumber is prevented.

Remarks.—These machines are suitable for planing panel boards, box lumber, or for surfacing of any kind within their capacity.

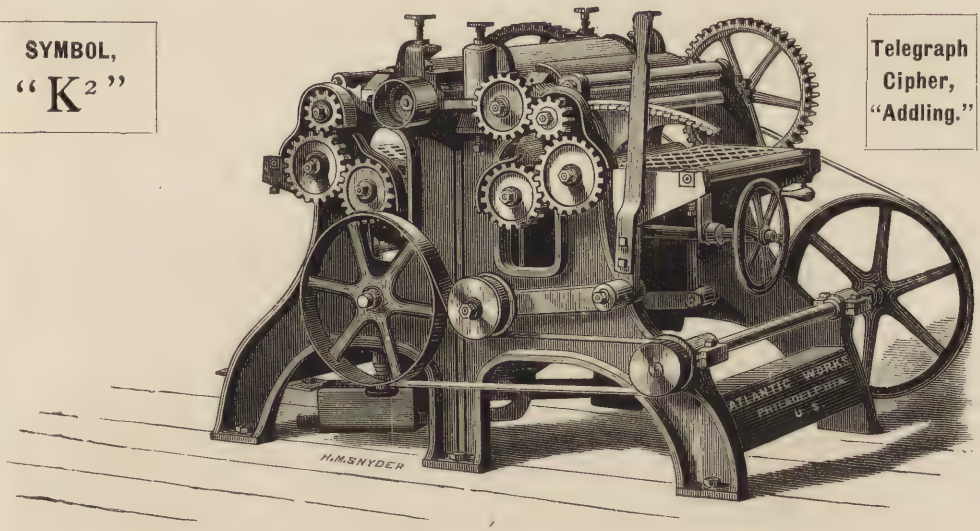
Details Furnished.—One set of cutters for cutter-head, a full set of wrenches and countershaft.

Speed.—Tight and loose pulleys are 12 inches in diameter, 5 inches face, and should make 850 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

SYMBOL, "K²"



Telegraph Cipher, "Addling."

K² 26-inch Surface Planing Machine,

To Thickness, and Plane One Side.

The Machine above is a strongly-built, powerful one, and for hard wood and heavy work is unexcelled for producing true and smooth work. It planes 26 inches wide and from ⅛ to 6 inches thick.

Feed Rolls.—There are two pair of 5½-inch feeding rollers, all driven by gearing, the upper ones at both ends. The bottom rollers are attached to the bed, and only one adjustment is required for lumber of different thickness.

Pressure Bars approach the cutter-head as closely as possible on each side, and effectually prevent all clipping of the lumber.

Cutter-Head is 6 inches in diameter, made of forged crucible steel, the journal and head being forged in one piece, and is belted at both ends through pulleys fitted on with a taper and held by nuts, which makes them run in perfect truth and balance.

Feed.—There are three rates of feed. When very hard and dry wood is to be planed one extra pulley is furnished which gives three slower, making six changes.

Details Furnished.—One set of cutters, a full set of wrenches and countershaft.

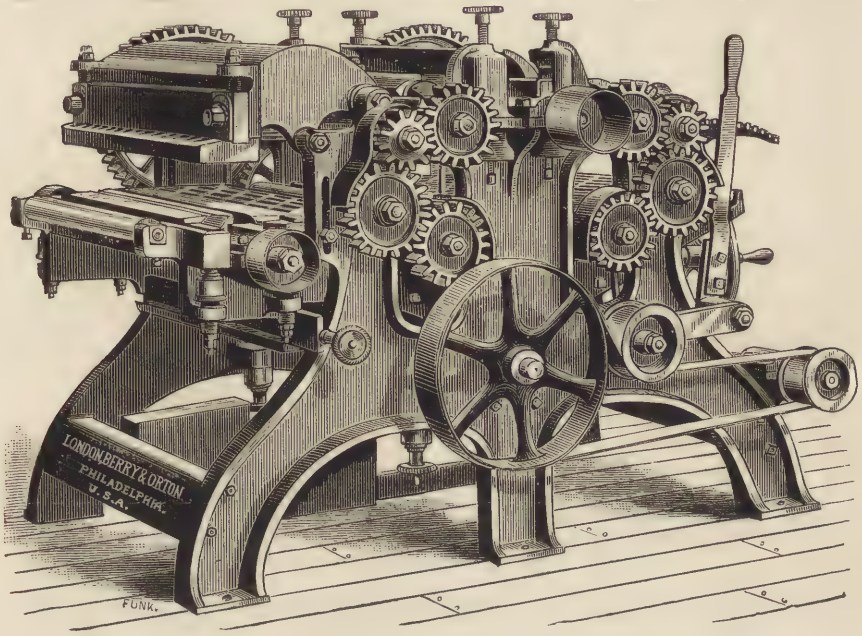
Speed.—Tight and loose pulleys are 12 inches diameter, 5 inches face, and should make 850 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

SYMBOL,
"K²"
Double Cylinder.

Telegraph Cipher,
"Adder."



K² 26-inch Surface Planing Machine,

To Thickness, and Plane Two Sides.

The Machine shown above is a strong, powerful one of the kind, to plane lumber to 26 inches wide and ¼ inch to 6 inches thick on both sides at one operation, and is well adapted for all requirements on first-class work on either hard or soft wood.

Cutter-Heads.—The upper is 6 and the lower 5 inches in diameter, made from forged crucible steel, the journals and head being forged in one piece; each head is belted at both ends through pulleys fitted on with taper and held by nuts, which assures their running in perfect truth and balance.

Feed Rolls.—There are two pairs of 5½-inch feeding rolls, all driven by gearing, the upper ones at both ends, the lower ones through good strong expansions, which is much better than trying to expand while the gear on the roll is passing a stationary one. With such arrangements, gears cannot, except while planing one thickness, be in proper relation to secure the best results. Only one adjustment is required for lumber of different thickness.

Pressure Bars.—Approach the cutter-head on both sides as closely as possible, and effectually prevent chipping of the lumber.

Details Furnished.—One set of knives for each cutter-head, two countershafts and a full set of wrenches.

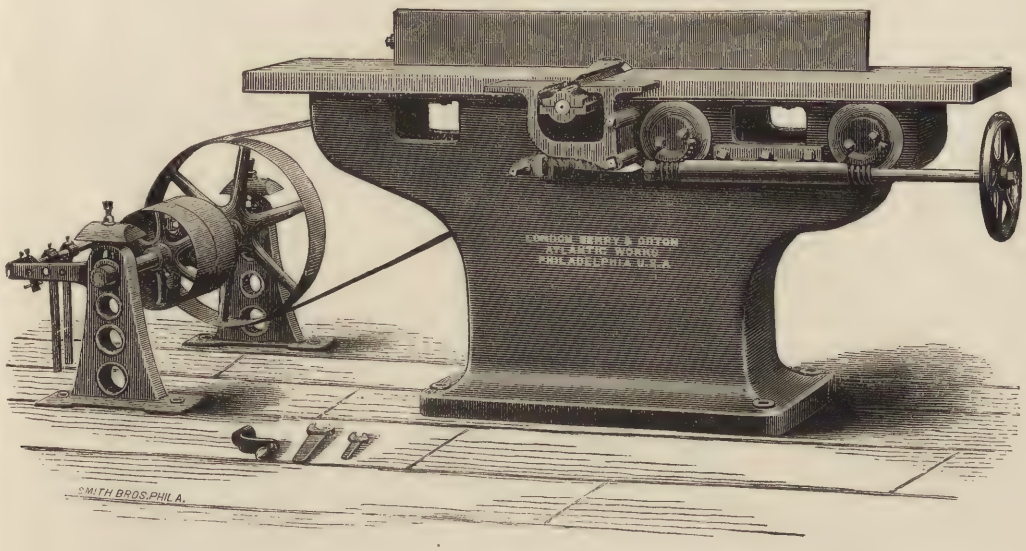
Speed.—Tight and loose pulleys are 14 inches in diameter, 7 inches face, and should make 850 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

SYMBOL,
"K4"

Telegraph Ciphers:
To Plane 12 inches wide, "Adjourn."
" " 16 " " "Adjunct."
" " 20 " " "Adjure."



Hand Feed Planing or Jointing Machine.

There are two tables, one at each side of the cutters, arranged to adjust independently. One of the tables has an adjustment up or down, so that a light or heavy cut can be taken; both of the tables have a horizontal adjustment to and from the cutters, so that the opening or mouth can be kept as narrow as possible for flat planing, or may be made wide enough to take, say, ¾ of an inch cut; that is, make a moulding ¾ inch deep, or cut a groove ¾ inch deep. The cutter-head has a vertical adjustment.

These Machines plane "out of wind," producing surfaces as true as can be made by hand planes; and as the amount cut away is regulated by hand and by sight, there is scarcely any kind of planing which cannot be done more truly, with less labor, and in one-tenth of the time required for hand work.

In respect to the adaptation of the Machine and its uses, a safe rule is that wherever there is bench work of any kind to perform, it can be employed with profit and advantage.

Jointing.—This Machine as now built (but not shown in the cut), the relative surfaces of the two tables can be changed so as to joint either straight, concave, or convex as desired.

Details furnished.—One set of cutters, a full set of wrenches and countershaft.

Speed.—Tight and loose pulleys are 10 inches diameter 4 inches face, and should make 800 revolutions per minute.

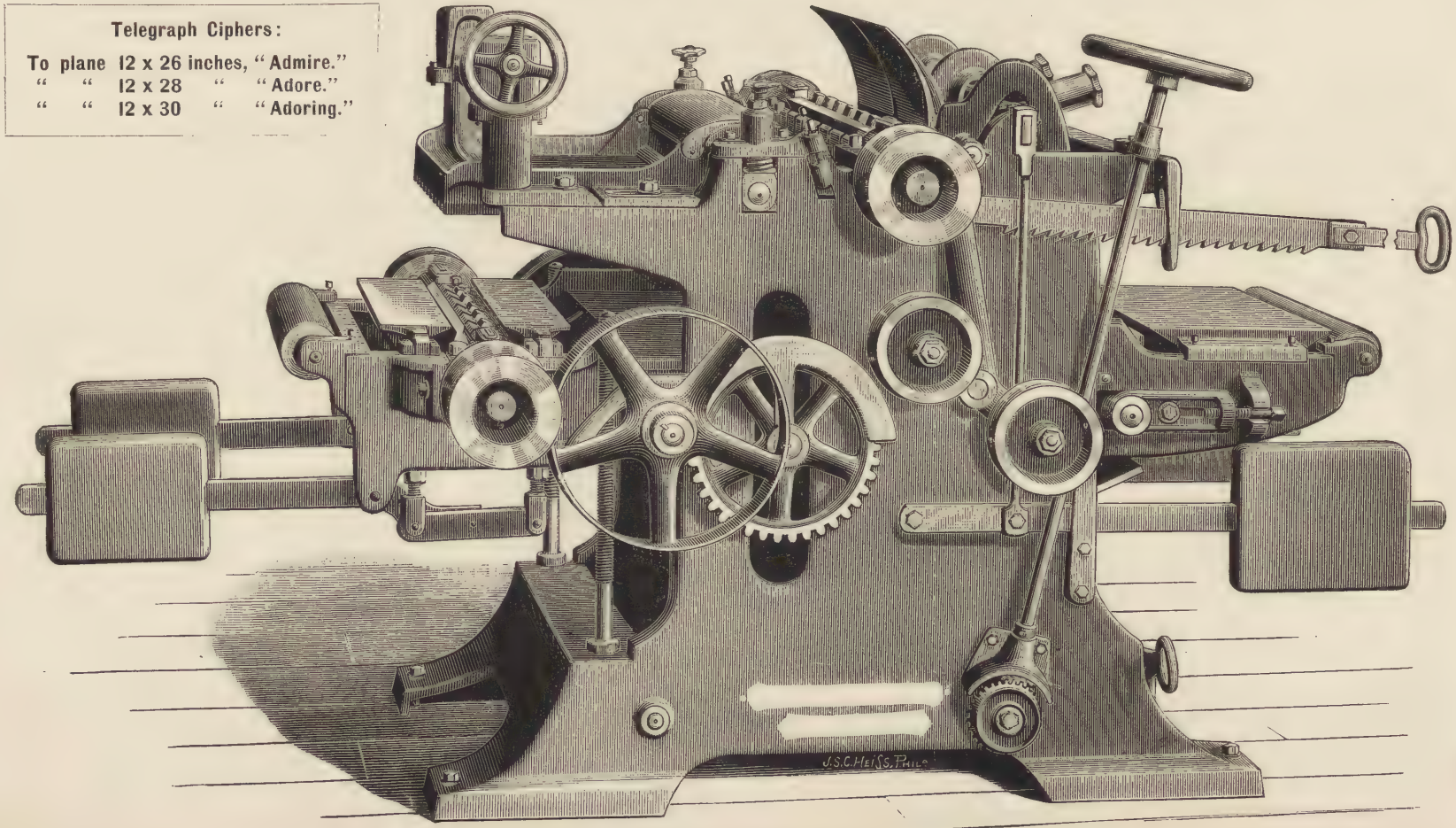
London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

Telegraph Ciphers:

To plane	12 x 26	inches,	"	"Admire."
" "	12 x 28	"	"	"Adore."
" "	12 x 30	"	"	"Adoring."



Endless Bed Double Surfacer.

Endless Bed Double Surfacer.

To Plane 26, 28 and 30 Inches Wide and 12 Inches Thick.

Patented December 28, 1875, and August 12, 1884.

The cut on the opposite page represents our latest improved and patented Endless Bed Double Surfacing Machine, constructed from new design patterns, and combining several valuable improvements. The frame of the Machine is self-sustaining in all its parts, and complete without girts or cross-ties. The base is cast in box form and contains the device for raising and lowering the revolving bed either by hand or power. The middle or centre is also cast in one piece, with the slides for the bed bolted on; it is raised and lowered on long planed ways at the outer edges of the sides of the frame by four connected screws. The revolving bed is composed of twelve slats of extra width (6½ inches), and is driven by sprocket wheels on shafts double geared across the Machine, giving great power with small belt contact; the sprocket wheels are arranged to revolve the bed by the heavy slats *and not by the links.* The links are strong and there can be no stretching or variation in the length of the bed. The slats and ways are so made that the slats will not mark the lumber when in motion. The top cutter-head, pressure rolls, pressure bars, and chip breakers, are contained in a box frame which, with the base, has planed surfaces where bolted to the tubular cored sides. The cutter-heads are four side forged cast-steel with four knives on each head, and both the top and under heads are belted both ends. The top cutter-head is arranged with sectional and oscillating chip breakers close to the knives, oscillating laterally and transversely, with the cutter-head unobstructed for sharpening knives and the free discharge of shavings. The under cutter-head is easy of access, the platen over the head swinging to one side, and has the usual yielding pressure bars. The Machine has our new improved sectional pressure feed rolls for feeding at same time lumber of unequal thicknesses, and is automatic. When feeding boards of varying thickness side by side, for an ordinary cut, the lumber enters the Machine as usual; for a variation in thickness up to one inch the action of the lumber entering automatically raises the rolls, dispensing with any appliance of levers, wedges, etc., to adjust. This improvement will be appreciated by operators. All the revolving parts are driven by open belts. The Machine is furnished with countershafts and floor stands. Pulleys are arranged on the countershaft to keep the under cutter-head belts the same tension at all positions of the bed. The shaft, with the flanged feed pulley, should be placed three feet from the centre of top cutter-head on the floor line. Fast and loose pulleys 14 x 7 inches, and should make 750 revolutions per minute.

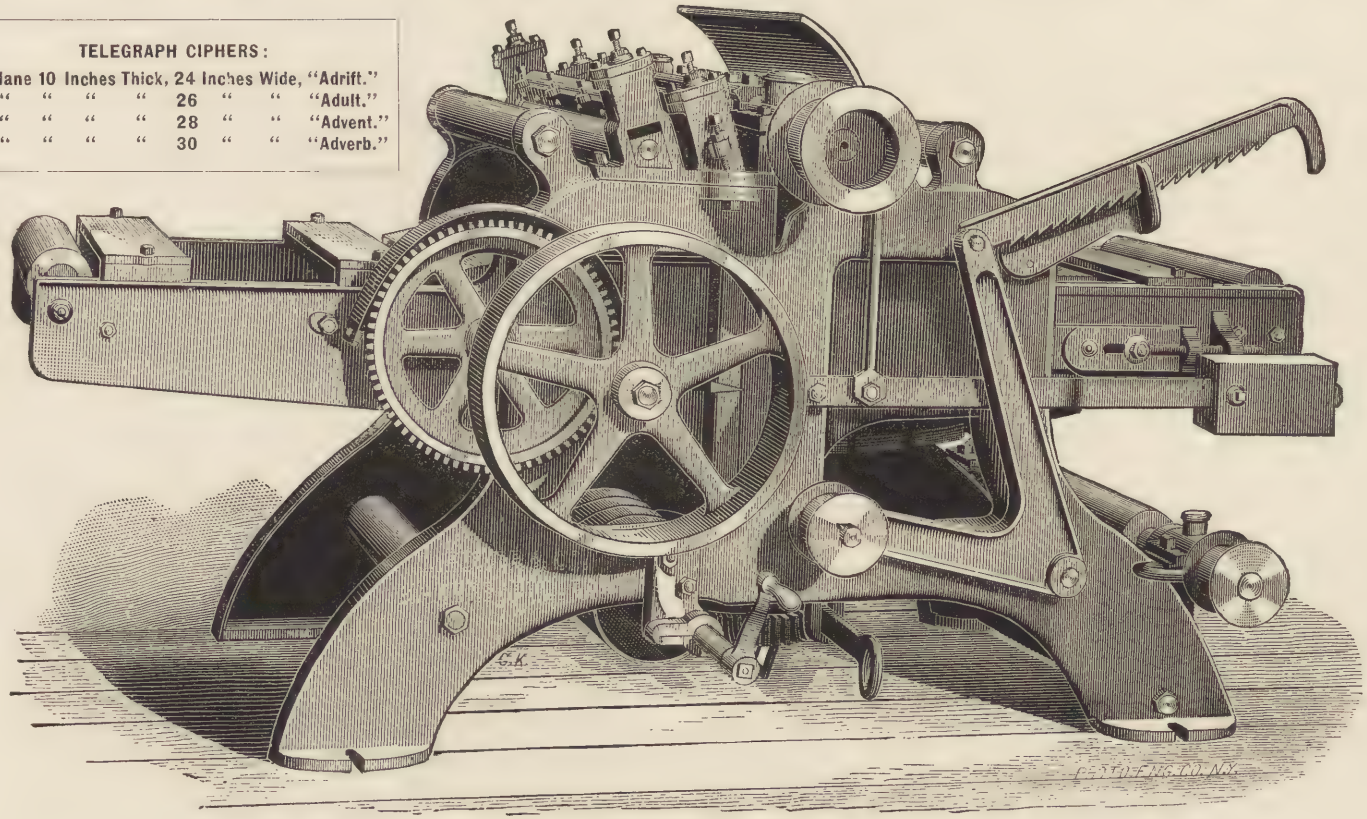
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

TELEGRAPH CIPHERS:

To Plane 10 Inches Thick, 24 Inches Wide, "Adrift."
" " " " " 26 " " "Adult."
" " " " " 28 " " "Advent."
" " " " " 30 " " "Adverb."



Endless Bed Single Surfacer.

Endless Bed
Single Surfacing Machine.

The cut represents a well-known heavy and strong Machine for surfacing lumber of any kind, for planing-mills, box-makers, agricultural works, ship and bridge timber. It will plane from 3/8 to 10 inches in thickness, and is made in widths 24, 26, 28, and 30 inches wide, doing the work rapidly and in the very best manner. The sectional rolls and pressure bars described, page 37, can be applied to this machine when desired.

Cutter-head is belted at both ends, and is made of solid forged cast-steel, with three or four sides to hold knives, and has suitable pressure bars to insure perfect work.

Feed is strong and reliable on all kinds of lumber, either wet or dry.

The revolving bed is raised or lowered either by hand or power for different thicknesses of lumber to be planed.

Speed.—Countershaft has tight and loose pulleys, 12 inches diameter, 6 inches face, and should run 825 revolutions per minute.

Details furnished.—One set of cutters, a full set of wrenches and countershaft.

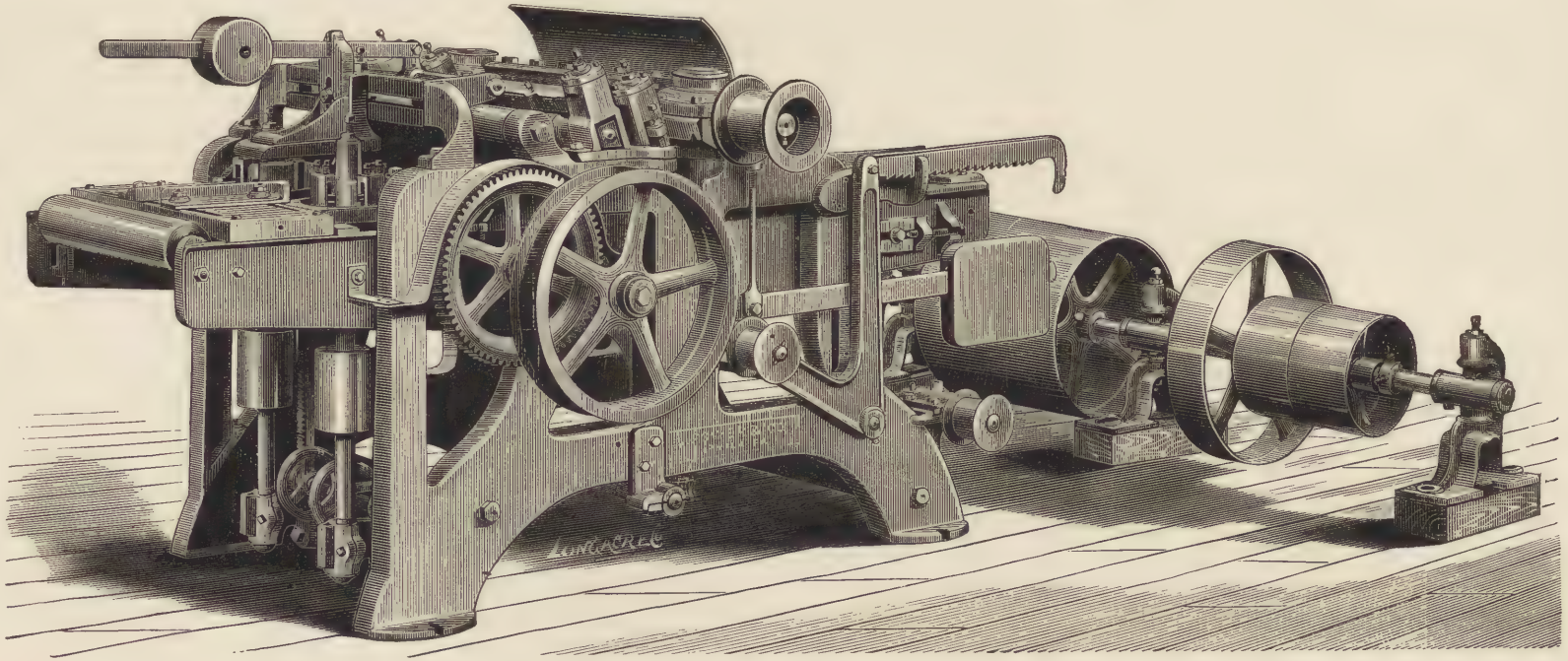
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

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TELEGRAPH CIPHERS:

To Plane 10 Inches Thick, Match 12 Inches Wide and Plane 26 Inches Wide, "Adjust."
" " " " " " 14 " " " " 28 " " "Admire."
" " " " " " 16 " " " " 30 " " "Admiral."



Endless Bed Surfacer and Matcher.

Endless Bed Surfacer and Matcher.

Construction.—This is a heavy, strong and compact Machine from new design patterns, with improvements, which for strength to the machine, perfect and rapid work, and convenience to the operator, make it unequaled for rapid surfacing, jointing or matching. It is made in three sizes, 26, 28 and 30 inches wide, working stuff from 3/8 inch to 10 inches in thickness and jointing or matching 13, 15 and 17 inches wide.

Cutter-head is solid forged cast-steel and four sides, slotted for bolts, belted at both ends.

The bed is raised or lowered either by hand or power.

Pressure Bars.—We apply an adjustable pressure, working between matcher-heads, adjustable to any point across the bed by loosening one nut, giving any desired pressure on the work by the weight and lever.

Remarks.—The Machine is used as a surfacer, the full length of knives, by removing the matcher-heads and dropping the matcher spindles below the bed, with the hand wheel operating rack and pinion, as shown in the cut.

Matchers.—Both matcher frames can be moved across the machine by screw, each independent of the other.

Details furnished.—One pair three-winged matcher-heads, with bits to work flooring, are furnished with the Machine. Jointing heads, extra, to order.

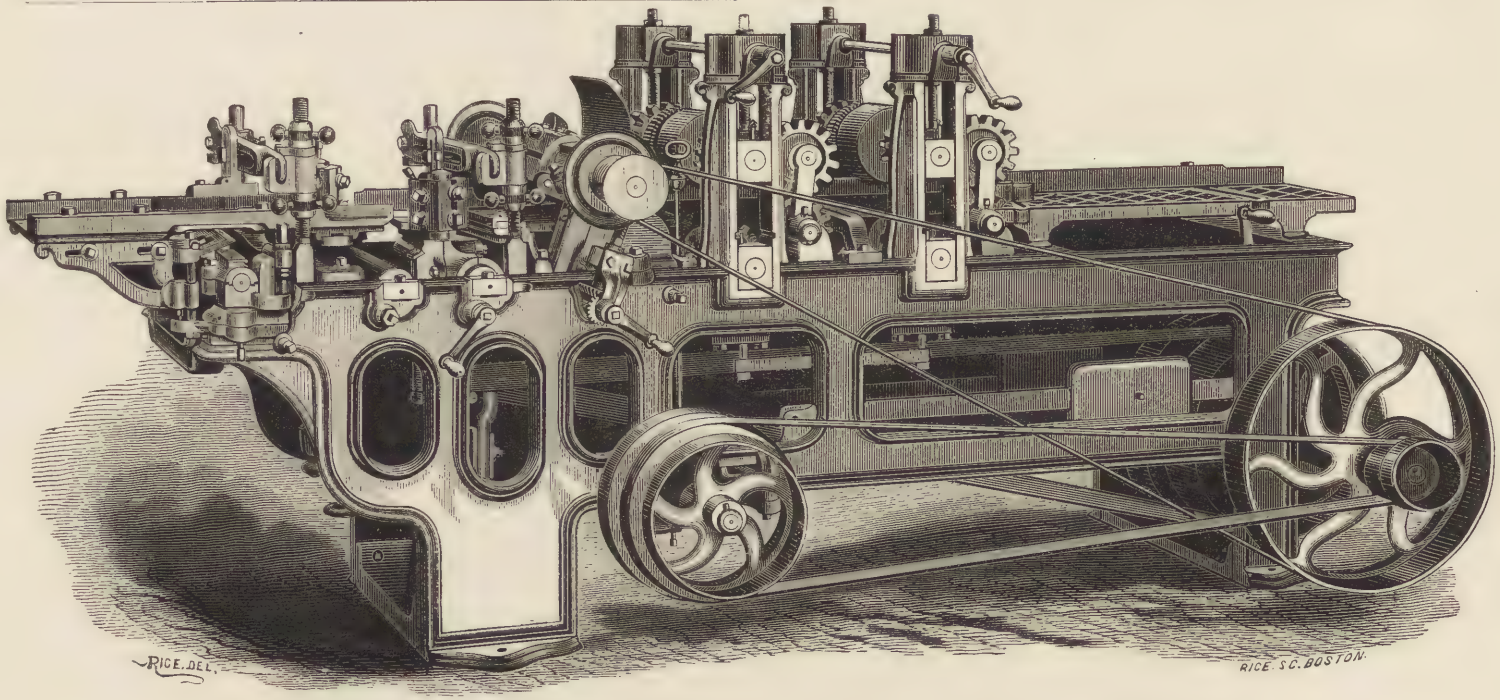
Speed.—Tight and loose pulleys, 14 inches diameter and 7 inches face, and should run 800 revolutions per minute. Weight, 26-inch-wide Machine and countershaft, 4,500 pounds.

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ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher, Four-Roll, to work 4 sides, 4 inches thick, 12 inches wide, "Alter."
" " " " " " " " 10 " " "Alton."

Telegraph Cipher, Two-Roll, to work 4 sides, 4 inches thick, 12 inches wide, "Alum."
" " " " " " " " 10 " " "Amass."



No. 1, Four-Roll Inside Moulding Machine.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

No. 1, Four-Roll Inside Moulding Machine,

TO WORK 4 SIDES, 4 INCHES THICK, 12 INCHES WIDE.

The engraving on the opposite page represents our Patent Improved Moulding Machine, combining all our latest improvements. This machine is strong and substantially built, and is expressly adapted for car work, house and picture-frame mouldings, dressing narrow boards, sheathing, flooring, etc., etc.

Among the important improvements claimed for this machine over all others, is the manner of connecting the Top Cutter-Head Boxes by a yoke passing *underneath* the bed of the machine, instead of over the top, thus giving free access to change, set, or sharpen the cutters. The importance of having the boxes tied together in some manner, so as to keep them in line, and avoid twisting and cramping of journals, is apparent to any mechanic.

The Patent Adjustable Pressure-Bar in front of Top Cutter-Head, and the hinged Pressure-Bars back of the Head, which are adjustable in all directions, and can be instantly swung back to give access to Side-Heads, Guides, etc., with our Patent Expansion Gearing applied to both ends of Feed Rolls, with weighted pressure, make it the most complete machine in the market for moulding work.

The Top Cutter-Head, with Yoke and Frame, is movable endwise or across the machine, giving opportunity for the slightest adjustment of position without disturbing the Cutters on the Head after they are set. This improvement is also applied to the Under Head, both being actuated by screws. The Under Head is also raised and lowered to regulate the "cut" in the same manner as the Top Head, instead of by means of wedges, as heretofore constructed. The End Table is hinged in such a manner as to drop *down* out of the way, when it may be desired to get at the Under Cutter-Head, which can thus be accomplished without disturbing the guides.

The opening in the Table, through which the Under Cutters project, can be enlarged at will, to admit of the use of moulding cutters. This is a great convenience in rebating, beading or springing mouldings.

The side Spindle Frames are moved from one side of the machine to the other by means of screws applied to each of the frames, which slide upon round bars, to which they are attached in such a manner that (by simply tightening a hand screw, which holds or clamps the side spindle frames firmly to the bar) all tremble or backlash is prevented. This is a great improvement over any other method, as it is well known to practical men that much difficulty is experienced in this particular.

With each machine is furnished a pair of Composition Side-Heads, also a pair of Patented Wrought-Iron Side-Heads, slotted on four sides and secured to the Spindle by a screw passing through the *top* of the Head in an inclined position, thus combining the power of a screw and wedge, while allowing cutters to be placed in any position on all four sides of the Head.

Balance Pulleys are applied to the Top and Side Spindles, thereby doing much to regulate any slight variation in the weight of cutters, and making a more steady cut.

Where sheathing and flooring or similar work is to be done, in large quantities, we apply our Patent Chip Breaker to the Side-Heads, at a small additional expense. These can be readily removed to work mouldings when desired.

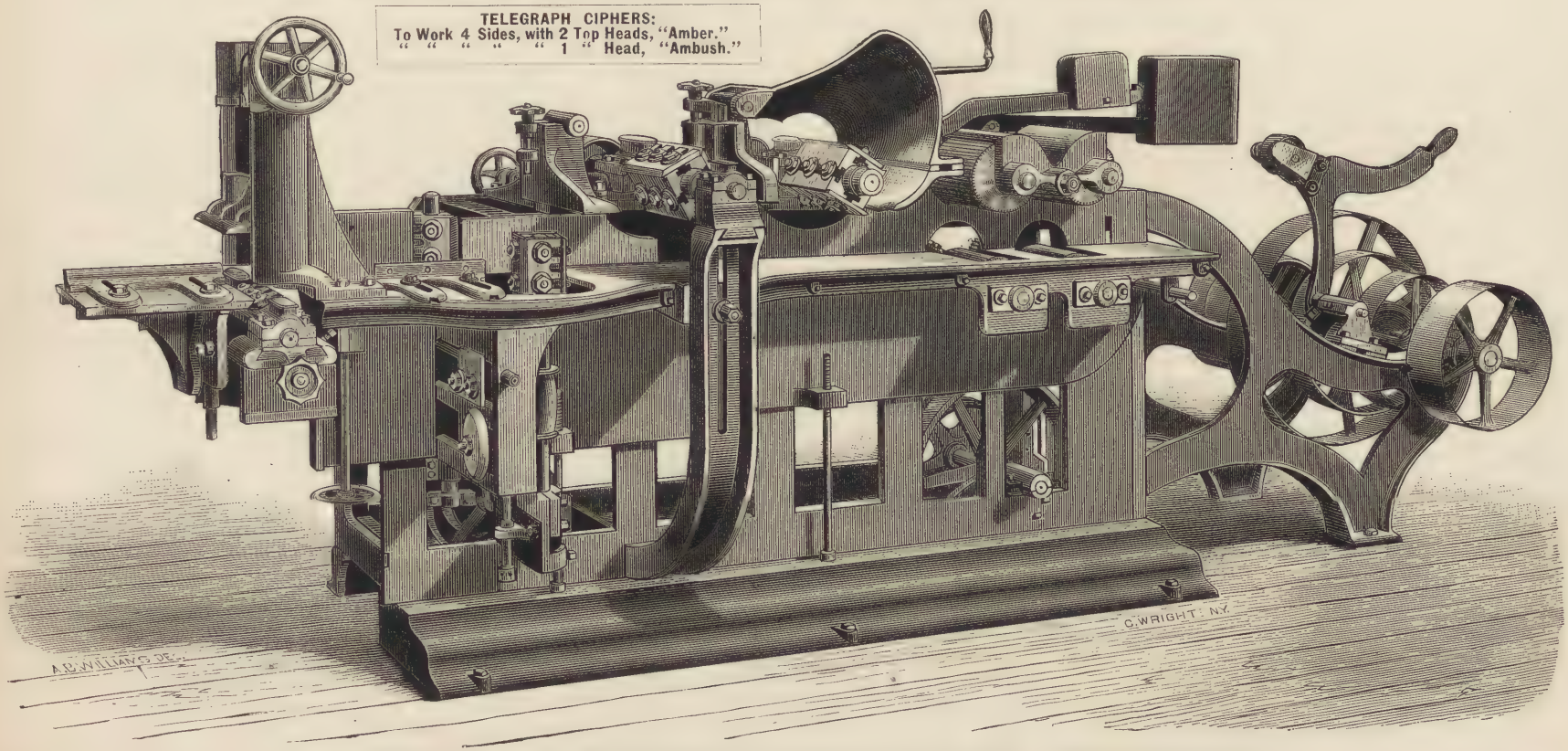
For working Gutters with the Under Cutter, we belt this head at both ends, making a very powerful machine. These machines are in use in many of the largest Moulding Mills in the country, have been AWARDED FIRST PRIZES WHENEVER EXHIBITED in competition with other machines, and are universally conceded to be superior to any other in the market.

Tight and Loose Pulleys, 14 inches diameter by 6 inch face, will be sent with machine (unless otherwise ordered), and should make 600 revolutions, giving the Cutter-Head 3800 per minute.

London, Berry & Orton,

Atlantic Works, Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.



IMPROVED TEN-INCH MOULDING MACHINE.

Improved Ten-Inch Moulding Machine.

The cut represents our new Improved Ten-Inch Moulding Machine, which is of improved construction, gotten up to supply the wants of car shops and large moulding establishments. The roughing-out, or extra top head, will be found very essential when very deep and heavy moulding is to be run and extra smooth finish is required. It is capable of working any moulding not exceeding ten inches in width and five inches deep, and will also dress on four sides, flooring and sheathing, planing and matching up to ten inches wide. The table is securely gibbed to middle of frame and at rear end near under cutter; also solidly clamped to the frame at front end. It also has the support of two large adjusting screws, which are geared at bottom with a powerful train of gears, making it easy to raise and lower the table. The under cutter has a horizontal and vertical adjustment, and is provided with a very heavy and substantial pressure-bar.

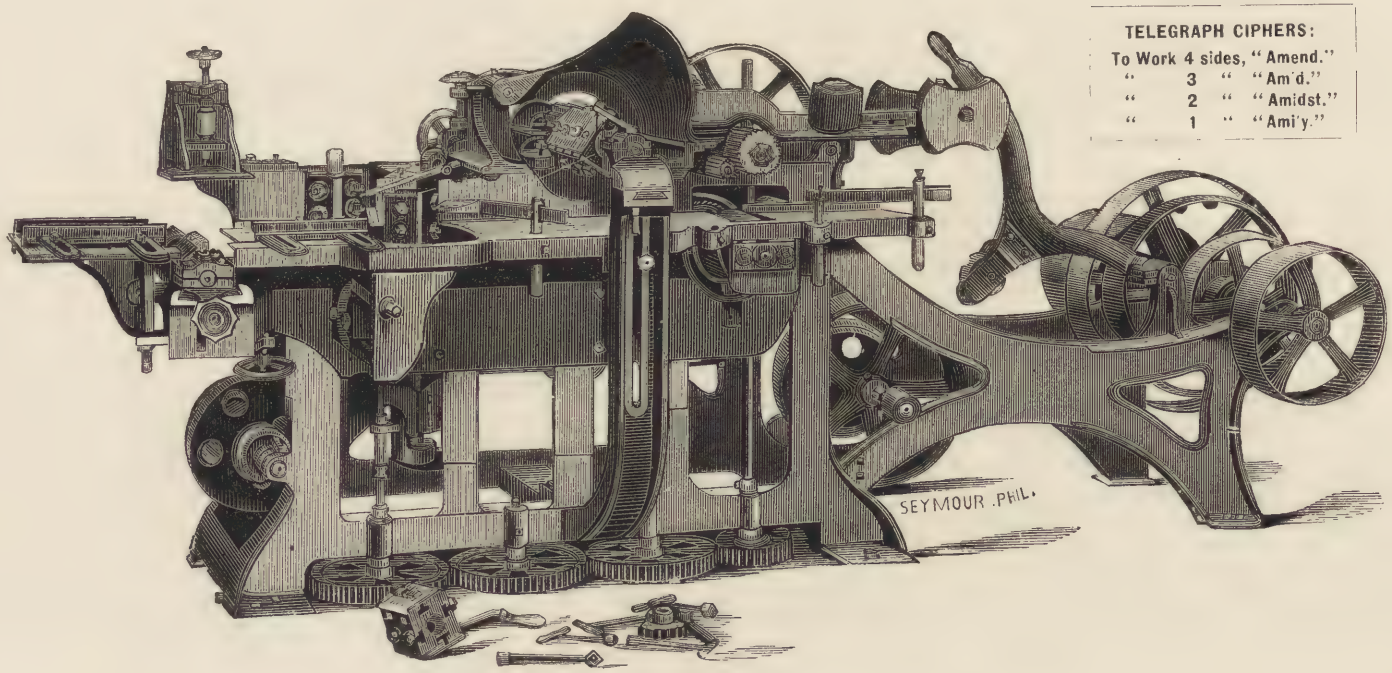
The inside and outside head-stocks are also adjustable; the top head-stocks have a lateral adjustment, and one or both, if desired, provided with our Patent Outside Bearing, which is the best outside support applied to any similar machine. The feeding mechanism is of improved construction, consisting of four six-inch rolls. The two upper rolls are fluted and heavily weighted, and hung in such a manner that they rise parallel with the bed, thus giving them an equal bearing the full width of lumber. All four rolls are driven with a continuous train of gears, making it the most powerful feed yet applied to any wood-working machine, and fully covered by letters patent. All heads are made of cast-steel, four-sided, four-slotted. One set of straight cutters furnished with each head; also one extra head and complete set of wrenches. The machine is provided with all necessary springs and three pressure-bars. The pressure-bar between the upper cylinders is yielding and provided with sectional steps. Four rates of feed are provided for, namely: twenty-two, thirty, thirty-six and fifty-two feet per minute. Tight and loose pulleys 13 x 7, and should make 900 revolutions per minute.

The above machine is guaranteed to be the most perfect and effective machine of its kind yet introduced for all the various purposes to which moulding machines are applied, and may be returned after a trial of thirty days if not satisfactory, and money will be refunded.

London, Berry & Orton,

Atlantic Works, Philadelphia, Pa.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.



Nine-Inch Four-Sided Moulding Machine.

Nine-Inch Four-Sided Moulding Machine.

We recommend this large Moulding Machine as being adapted to all the finer grades of work usually done on expensive inside machines. It comprises all the advantages of an inside machine, and also those of an outside or overhung machine. It is well known that an outside machine is much the handiest to change to different kinds of work, and that an overhanging head will not do as perfect work as a head that has a solid bearing on each side of it.

One of the main features of this Machine is the solid outside bearing for the top cutter-head shaft, bolted to both frame and table. The inside and outside vertical head-stocks are both adjustable, and can be moved to any angle or position desired, while the machine is in motion, with greater accuracy and speed than any other machine. Caps are fitted in on the back-side of these head-stocks, so that the belts are always pulling the shafts against solid bearings instead of against caps. The gibs that hold the table to the frame extend the whole width of the table, and the face of the frame is planed so as to allow them to slide entirely to the top of it, thus holding the table very firmly. The bolt that fastens the outside bearing to the table extends entirely through the table into the gib, and clamps the table to the frame immediately beneath the top cutter-head, where it is in most need of a substantial support. The feed is very strong and powerful, consisting of two upper rolls and one lower roll, all placed very near the top cutter-head, to hold the lumber firmly while being operated on. The large roll is placed directly over the under one, and the under roll is operated independently of the top ones. The table in front of the under feed-roll is planed one-eighth of an inch lower than the other parts of it; this is done to avoid friction, and to allow the lumber to be fed in on a line with the highest part of the table. The under-head on this machine can be moved sideways with a hand-screw, as well as up and down; the advantage of moving it sideways is very great when doing any uneven work, as it is much easier to move the head with a screw than to re-set the cutters.

This machine has two sliding blocks, or pieces dovetailed into the table, in front and back of the lower cutter-head, for the purpose of chip-breaking and for allowing mouldings to be sprung with that head. It has also an adjustable chip-breaker for the inside head. It has a binder for feed-works, instead of a clutch, which will be found an advantage on heavy work. The heads are all four-sided cast-steel, slotted. We furnish five heads and five sets of cutters with each four-sided Machine. Weight, 3200 pounds.

It has tight and loose pulleys, fourteen inches in diameter, seven-inch face, which should make 850 revolutions per minute.

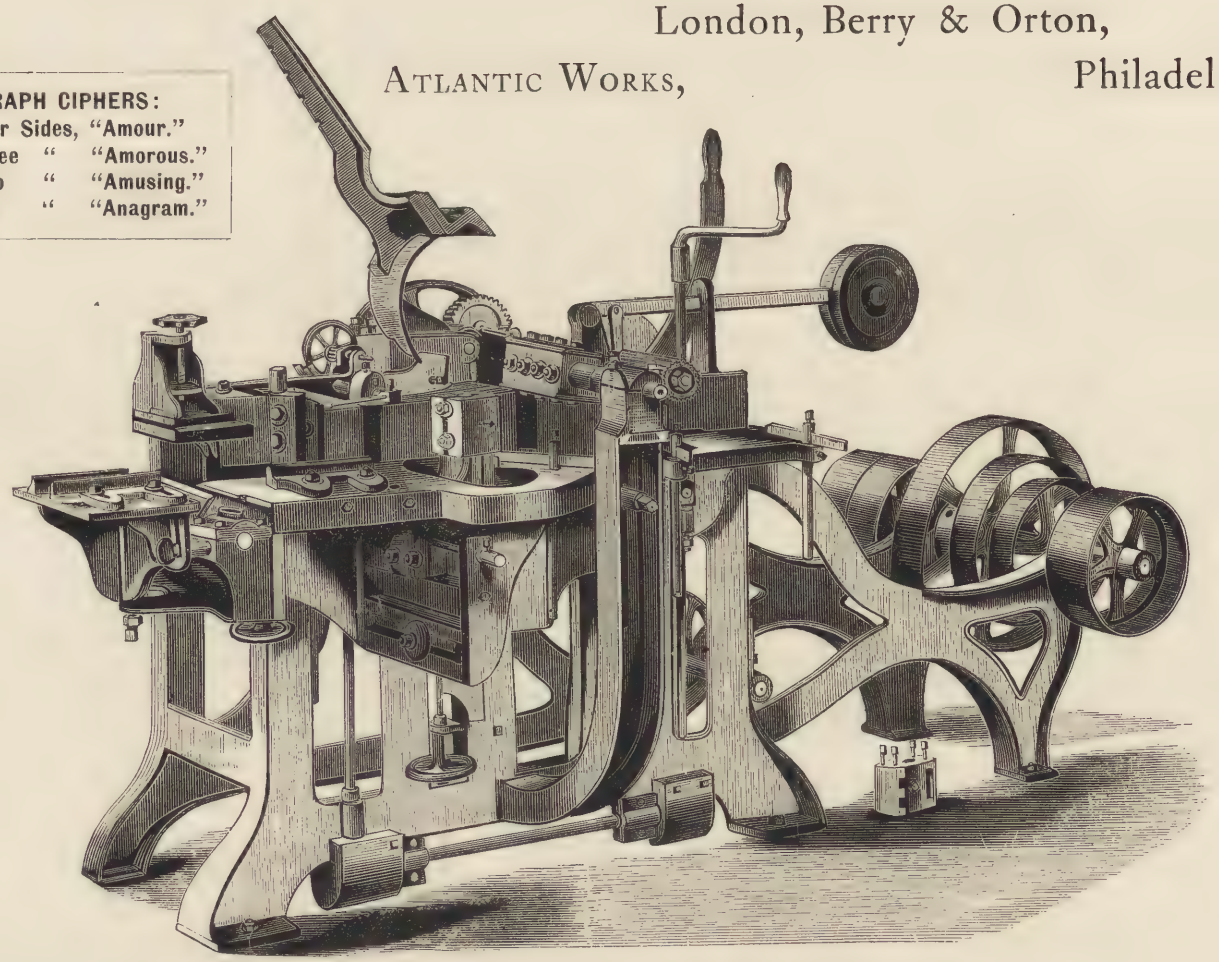
London, Berry & Orton,
Atlantic Works, Philadelphia, Pa.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

TELEGRAPH CIPHERS:

To Work	Four	Sides,		"Amour."
"	"	Three	"	"Amorous."
"	"	Two	"	"Amusing."
"	"	One	"	"Anagram."



Improved Seven-Inch Moulding Machine.

Improved
Seven-Inch Moulding Machine.

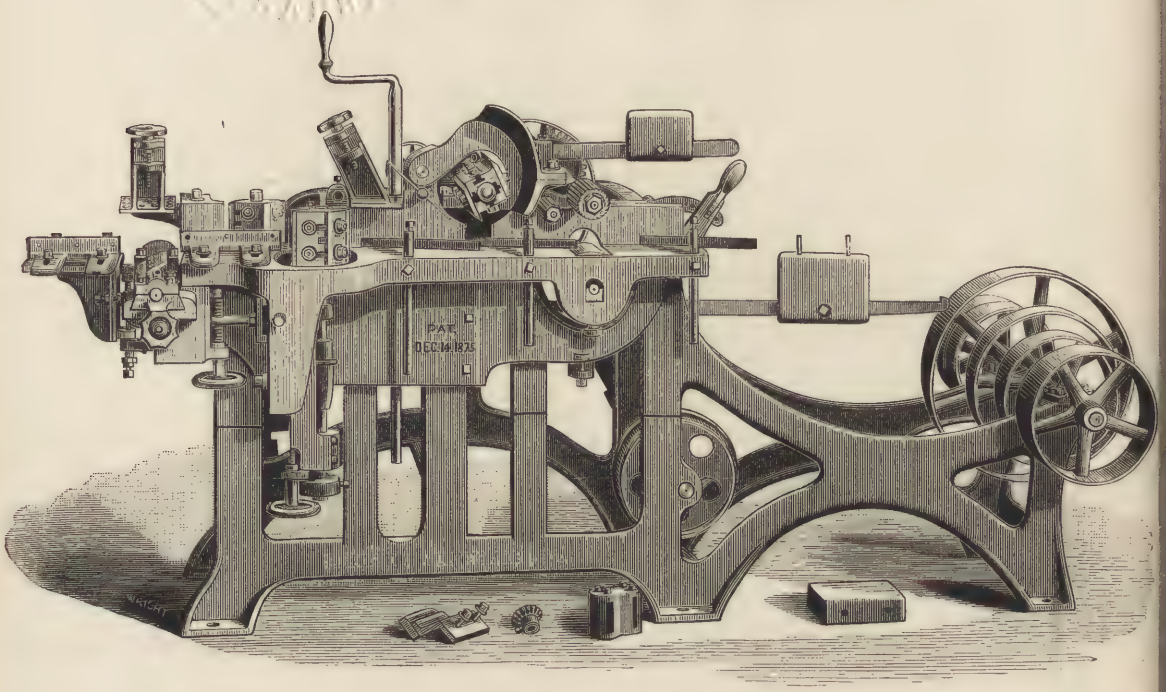
This machine has many valuable improvements not heretofore in use. We desire to call attention to the solid outside bearing for top cutter-head shaft, and which also acts as a support to the table. It is bolted to the frame below the table with bolt extending through it into the gib that holds the table to the frame, thus clamping the frame, table and outside bearing securely together. The upper part of the outside bearing is dovetailed into the main standard, and can be quickly removed for changing cutter-heads. The table is raised or lowered with two screws geared together, causing it to rise the same on both ends, and the operator can adjust it from where he stands to feed the work. Inside cutter-head has an adjustable chip-breaker. The inside and outside head-stocks can be set to any angle, fastened, then be moved up and down or in and out accurately without changing the angle. The table has a slide that can be moved to and from the under cutter-head so as to allow cutters to project through face of table. The feed is strong, consisting of two upper rolls and friction roll in the table. The feed is driven by a binder on feed belt, which will be found much better than driving with a clutch. The cutter-heads are cast-steel, and slotted. We furnish five heads, and five sets plain cutters with each four-side machine.

Tight and loose pulleys, 10½ inches in diameter, and 5 inches face, and should run 900 revolutions per minute. Weight of machine, 1700 pounds.

London, Berry & Orton,

Atlantic Works, Philadelphia, Pa.

TELEGRAPH CIPHERS:	
4 Sides, "Anchor."	2 Sides, "Angling."
3 " "Angel."	1 " "Anguish."



Improved Six-Inch Moulder.

The cut represents our Six-Inch Four-Side Moulder, with all late improvements. The table is raised or lowered by two screws geared together, giving support to each end of table, and convenient to operator. The inside cutter-head has an adjustable chip-breaker. The inside and outside heads can be set to any required angle, fastened, then be moved up or down, or in and out, without changing the angle; the table has a slide that can be moved to and from the under cutter-head to allow cutters to project above face of the table. The feed is strong, consisting of two upper feed rolls and large friction roll in the table, and is driven by binder on the feed belt. The cutter-heads are cast-steel, and slotted. We furnish five heads and five sets of plain cutters with each four-side machine. Tight and loose pulleys, 10½ inches diameter, 5 inches face, and should make 900 revolutions per minute.

London, Berry & Orton,
Atlantic Works, Philadelphia, Pa.

PANEL-RAISING MACHINE.

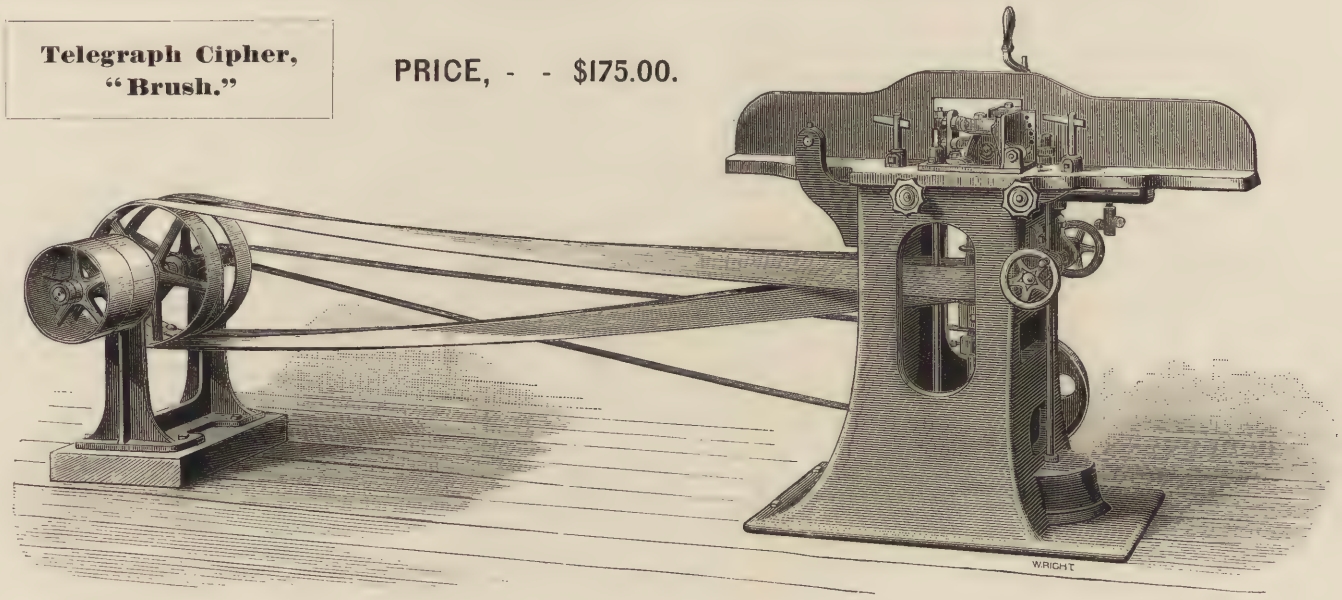
This machine is simple in design and substantial in its framing, and will work panels on one or both sides at a time. The peculiar form of cutters gives them a drawing cut, working readily on either hard or soft woods, and so smoothly that the work needs no further preparation for painting. The machine is provided with new combination heads, which admit of changing the moulding cutters so as to produce shoulder, bevel or O. G. on the panel as desired, without disturbing the other cutters.

The heads and head-stocks are adjustable vertically and laterally; can also be set on any angle ever required. It is also provided with two feed rolls, and no care has been wanting to make this machine all that could be desired.

It has countershaft, with tight and loose pulleys 10 x 4; they should make 900 revolutions per minute.

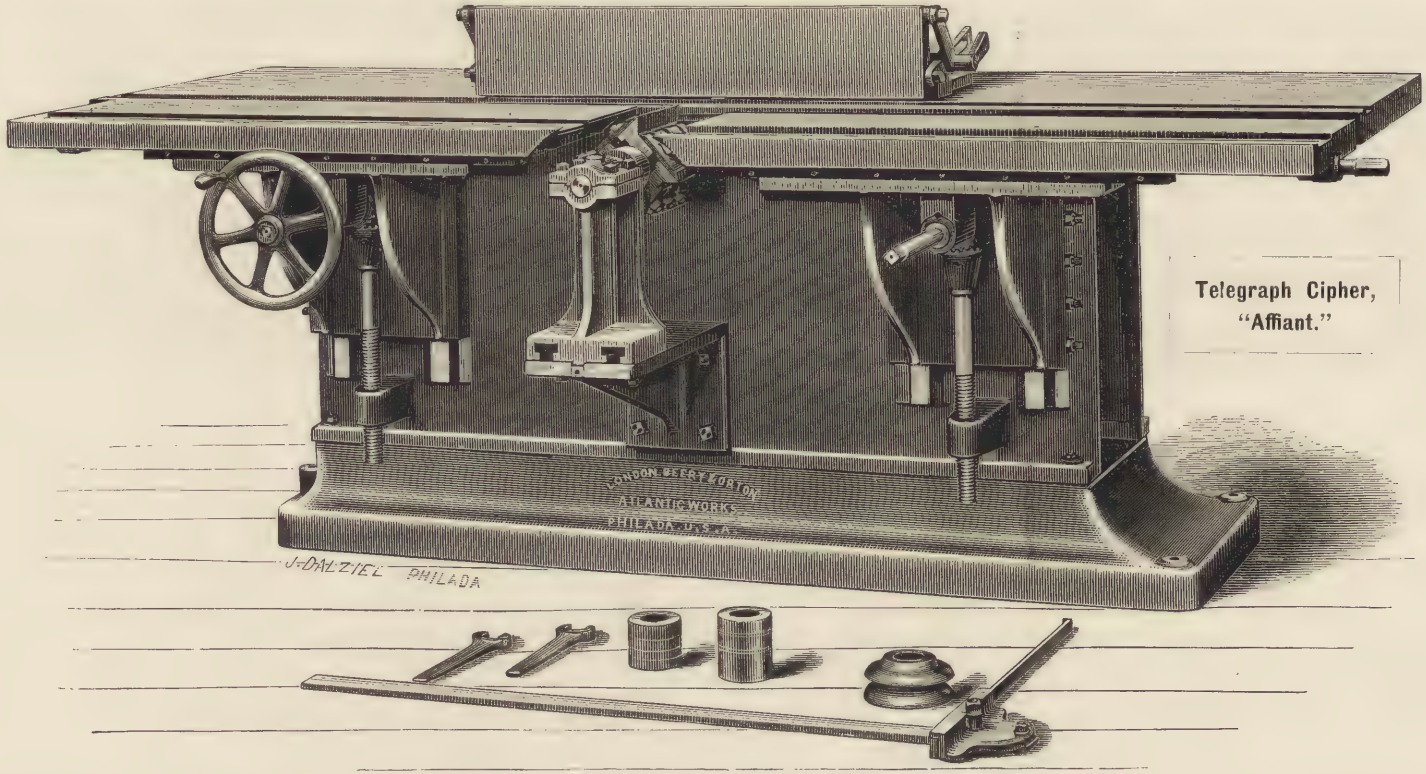
Telegraph Cipher, "Brush."

PRICE, - - $175.00.



London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.



Telegraph Cipher,
"Affiant."

Extra Heavy Universal Wood-Worker.

Extra Heavy Universal Wood-Worker.

The machine represented on the opposite page belongs to a class generally called "Universal" Machines, because of their being applicable to a great variety of uses, such as Moulding, Grooving, Rounding, Chamfering, Matching, Gaining, Planing out of wind, Planing straight, or tapering, and so on.

It is much heavier and stronger than machines of the kind are generally made, and is especially adapted for use in railroad car building, where large pieces, such as corner posts, truck timbers, etc., have to be prepared.

Construction.—Consists of a large heavy base on which are mounted the two sides, carrying the back table, pivoted gauge, and also the mandrel and cutter-head, which is made with one loose bearing that can be removed for changing heads, and can be raised or lowered by a screw (not shown) to any desired height between the two front tables. The front tables have each an adjustment for height, and also horizontally, and can be set to or from the cutter-head as desired. They are recessed near the front edge for the reception of a slide used in gaining, and for other pieces used to fill up the gap between the two tables when it is necessary to have the tables continuous.

Arrangement of tables and head are most complete, and when used for gaining, rabbeting, etc., the three tables are all set at the same height, and the depth of the cut regulated by simply raising or lowering the cutter-head.

Cutter-Heads are 8 inches in diameter, 8 inches long, slotted on all four sides for bolts, fitted to a 2-inch steel mandrel, mounted in three good substantial bearings.

Tables.—The back table is 8 feet long and 29 inches wide. The front ones are each 4 feet long and 15 inches wide, making the whole top 8 feet long and 44 inches wide.

Details supplied.—One 8-inch cutter-head, one set of knives, for straight work, a full set of wrenches and countershaft, complete.

Speed.—Tight and loose pulleys are 12 inches in diameter, 6 inches face, and should make 560 revolutions per minute.

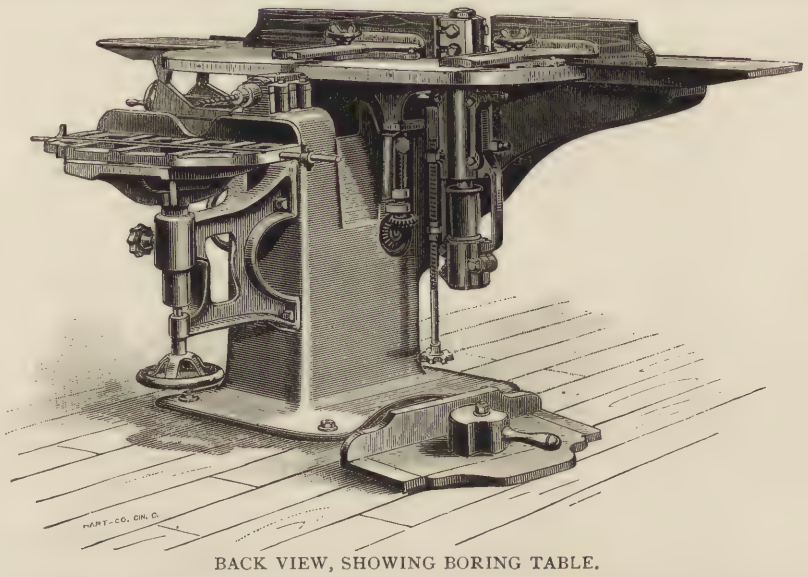
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

Telegraph Ciphers: "Brass."
" " with Boring Table, "Bramble."
" " " Countershaft, "Bravado."

Double Universal Wood-Worker.



BACK VIEW, SHOWING BORING TABLE.

The frame of this machine consists of a rectangular hollow column with a broad base, all cast in one piece, resting well on the floor. The front side of the machine carries on strong vertical slides a *heavy double bracket*, also cast in one piece, *adjustable up and down* by the hand-wheel in front. This bracket supports the two table tops, each of which are 40 inches long and 12 inches wide, inclusive of the recess for slide-board, shown in the cut.

The total length of the tables is thus nearly 6 feet 10 inches, which is of special importance in planing out of wind or making bevel, mitre and straight glue joints. The two front tables can be raised or lowered *together* or one of them independently of the other.

This arrangement is of great advantage for many kinds of work, as, after once establishing the relative positions of the two tables, it is retained, regardless of adjustment for depth of cut in gaining, plowing, rabbeting, ripping, cross-cutting and other kinds of work.

The tables are also adjustable to and from each other and the cutter-head, the one on the right adjusting to any position for cutter-heads of different diameters, but still remaining horizontal. This adjustment on the inclines is at an angle of 50 degrees to the cutting line, the opening, closing or widening in proportion to the raising and lowering of the table, thus preventing any splintering or tearing.

Each table is provided with a recess 4 inches wide, for the reception of a slide-board, used in connection with the adjustable Gaining Frame, or for special mitre or bevel frames, for cross-cutting, mitering, tenoning, planing, and other cross and angular work.

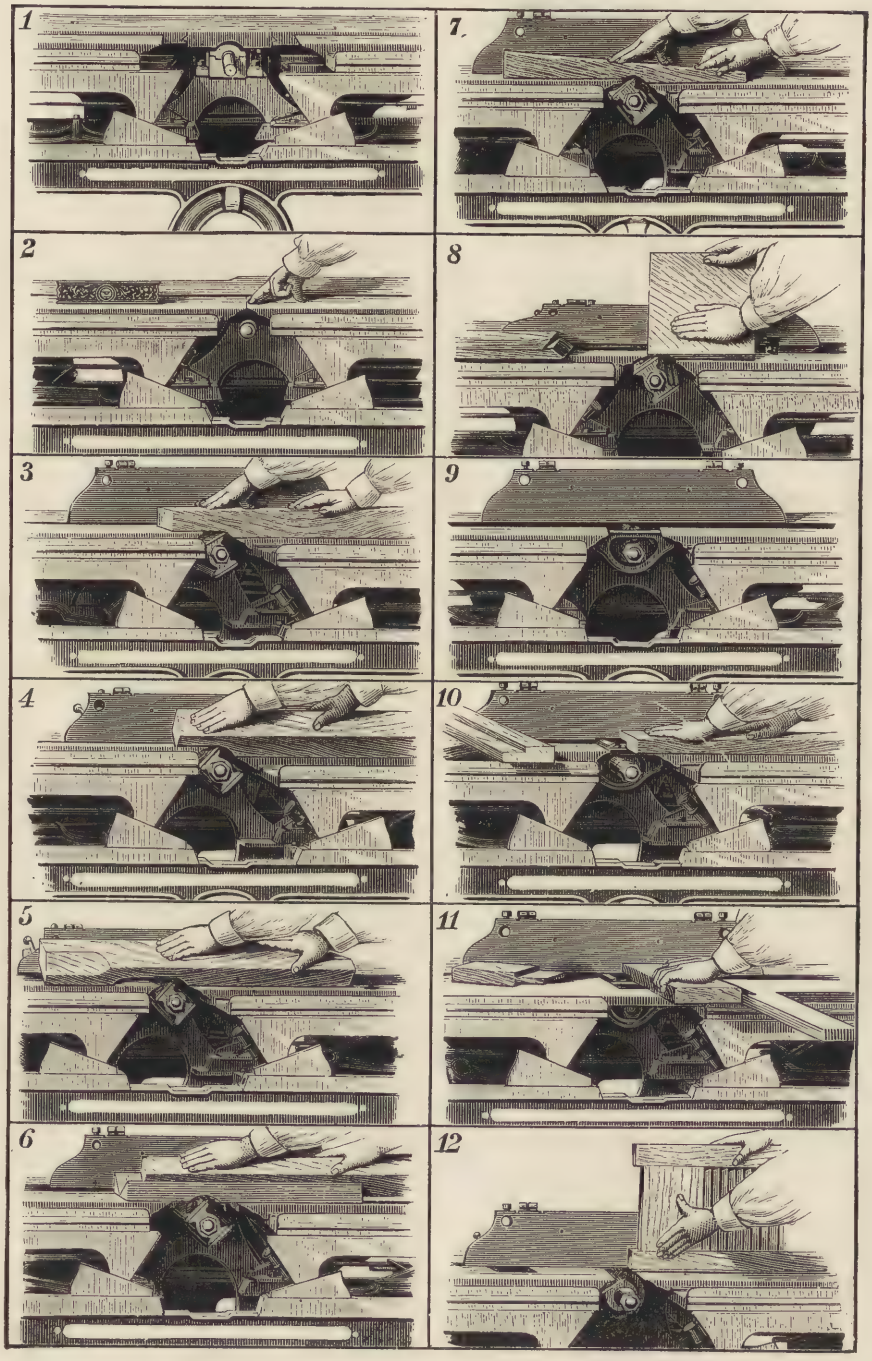
The vertical mandrel can be used to carry any kind of cutter-heads and knives for rabbeting, beading, rounding, moulding, or plain finishing, and when not in use can be *lowered*, by means of the hand-wheel shown, below the tables, leaving them free and unobstructed for gaining or plowing, and cross-cutting long and wide material.

By removing the guide-fence, and bringing the three tops to a common level, the side mandrel can be used for *heavy and light friezer or shaper work*, with and without forms, for straight or curved work.

For this purpose we now make *special shaper knives*, which will cut either *with or against the grain*, or *end wood*, without splintering or tearing, the head running in the same direction for all work.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

Manner of Operating Universal Wood-Workers.



1. { Tables slide laterally, raise and lower, recede and
2. { advance towards the cutters.
3. Planing out of Wind, Jointing, Squaring, and Smoothing.
4. Beveling, Cornering, and Chamfering.
5. Chamfering between the ends.
6. Cornering with Chamfering Form.
7. Tapering.
8. Mitering.
9. Rabbeting Head and Iron.
10. Rabbeting.
11. Tenoning.
12. Rabbeting and Jointing Block at one operation.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

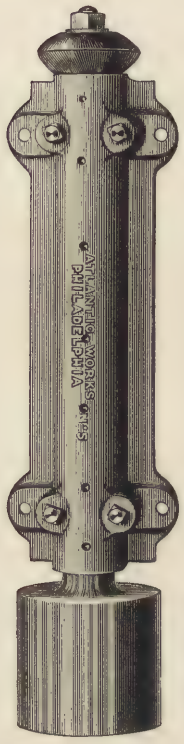
Manner of Operating Universal Wood-Workers.

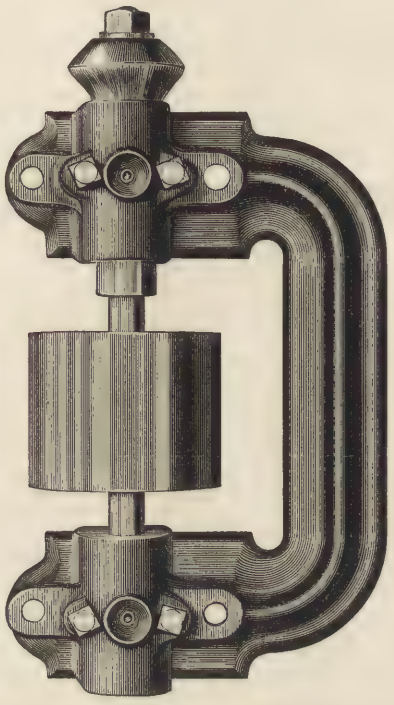


13. Panel Fence, Iron and Head.
14. Panel Raising, both sides at one operation.
15. Tongueing, Grooving, Hand-matching.
16. Rolling Joints.
17. Making two Plows at one operation.
18. Serpentine and Waved Moulding.
19. Planing and Fluting Banisters.
20. Ripping and Splitting.
21. Cross-Cut Sawing.
22. Gaining at Right Angle.
23. Gaining at any Angle.
24. Circular, Oval, and Elliptical Mouldings.

London, Berry & Orton, Atlantic Works, Philadelphia, Pa.

Cast-Steel Saw Arbors.





The above cut shows our Saw Arbors, such as are furnished to go on wooden frames. They are made from steel, with long, substantial bearings, and mounted in iron frames, as shown. These mandrels are made in twelve sizes, as follows:

Symbol.	Description.	Length from out to out of boxes. Inches.	Diameter. Inches.	Hole in Saw. Inches.	Diameter of Pulley. Inches.	Face of Pulley. Inches.	Telegraph Cipher.
S 10	Saw Arbor Pulley on end.	15	1	$\frac{13}{16}$	4	3	Campaign.
S 11	" " " "	18	$1\frac{1}{8}$	$\frac{15}{16}$	5	4	Canal.
S 12	" " " "	21	$1\frac{1}{4}$	$1\frac{1}{16}$	6	5	Canary.
S 13	" " " "	24	$1\frac{1}{2}$	$1\frac{5}{16}$	7	6	Candid.
S 14	" " " "	27	$1\frac{3}{4}$	$1\frac{9}{16}$	8	7	Candle.
S 15	" " " "	30	2	$1\frac{11}{16}$	10	8	Candor.
S 16	Saw Arbor Pulley between.	15	1	$\frac{13}{16}$	4	3	Candy.
S 17	" " " "	18	$1\frac{1}{8}$	$\frac{15}{16}$	5	4	Canine.
S 18	" " " "	21	$1\frac{1}{4}$	$1\frac{1}{16}$	6	5	Canker.
S 19	" " " "	24	$1\frac{1}{2}$	$1\frac{5}{16}$	7	6	Cannibal.
S 20	" " " "	27	$1\frac{3}{4}$	$1\frac{9}{16}$	8	7	Cannon.
S 21	" " " "	30	2	$1\frac{11}{16}$	10	8	Canopy.

London, Berry & Orton,
Atlantic Works, Philadelphia, Pa.

Double Cut-Off Saw.

Telegraph Cipher, "Annoy."

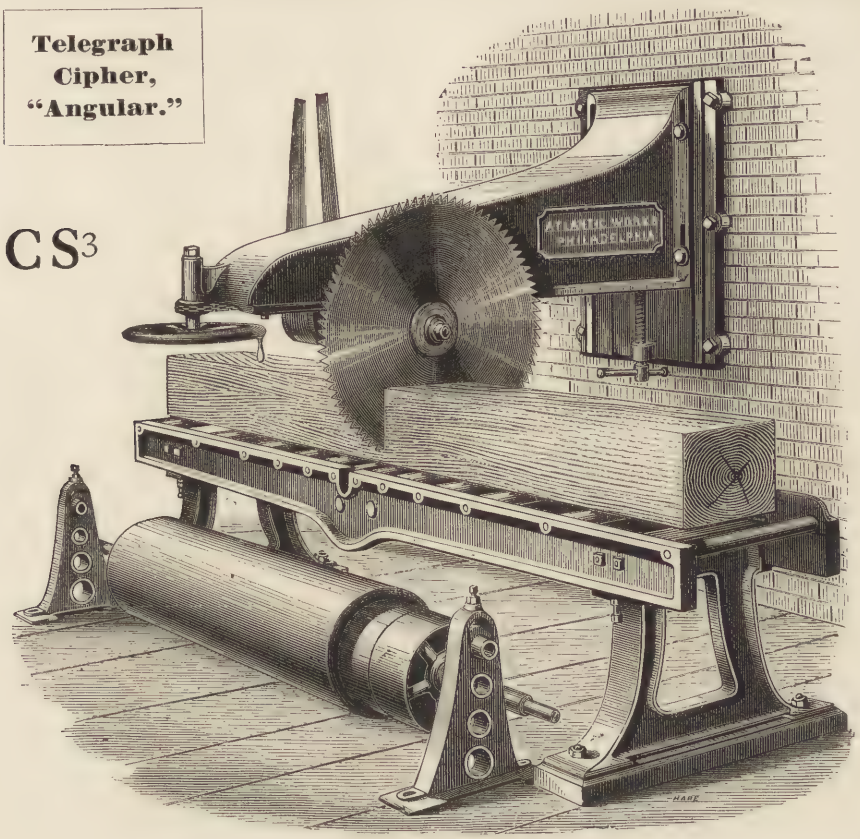
London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

The cut represents our Double Cut-off Saw, a labor-saving machine designed for use in the manufacture of furniture, cabinet work, or in any place where it is desired to cut stock to uniform lengths, cutting both ends square and accurately to length at one operation, with capacity from 5 inches to 6 feet 6 inches in length, and with 14-inch diameter saws will cut 16 inches wide. The machine is constructed of metal, with iron frame and tables; the saw arbor frames are gibbed to the main frame and have adjustable boxes. The saw arbors are of large diameter, made of the best cast-steel, and have collars and nuts at both ends of each arbor. The saw arbors are driven by one belt, the pulley to drive is placed on the arbor at the left hand of the machine, the arbor in the right hand movable frame is driven by a splined steel shaft passing through the saw arbor; this steel shaft may be detached in a moment to change the saws from the inside to the outside of the tables. The tables are planed to accurately true surfaces with all required slots, grooves, and angle-irons for a convenient adjustable cross-cut gauge, mitre gauge and an improved reversible rip gauge. The tables are hinged and can be elevated to any required height by the screw and hand wheel, or raised to a perpendicular position to remove the saws. The right hand movable saw arbor frame and table is adjusted for lengths by hand wheel at end of frame operating screw. The machine is furnished with two 14-inch diameter cut-off saws, adjustable cut-off gauge, mitre gauge, reversible rip gauge and countershaft, fast and loose pulleys on countershaft 10 x 5 inches, and should make 525 revolutions. Weight, 1100 pounds.

Telegraph Cipher, "Angular."

CS3



Bracket Cut-Off Saw.

This machine is a strong, heavy and durable cross-cut saw, designed to endure all the strains it may receive in cutting off large timbers that are used in the construction of cars, bridge and other heavy work.

Construction.—It consists of a long, heavy bracket, on which the saw-carriage is mounted, bolted to a heavy plate fastened to the wall or other suitable support, and can be raised or lowered to suit saws of different diameter. The saw has a traverse movement over the table through the head-wheel, shown at the front of the machine.

Saw Arbor.—Is made of steel, 2¼ inches in diameter, mounted in good substantial bearings, and driven from a countershaft and tightener from above, so that the belt is kept of equal tension.

The Table, which is ten feet in length and supplied with wrought-iron friction rolls to facilitate the movement of heavy timbers, is also provided at the back with a fixed fence.

Saws.—The machine receives to 40 inches in diameter, and will cut stock 16 inches thick.

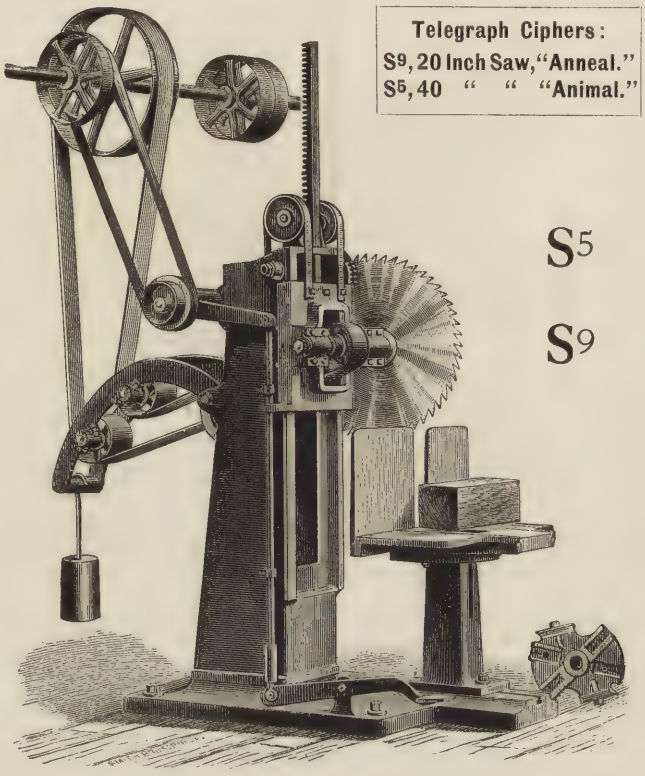
Details supplied.—One 30-inch saw, countershaft and belt tightener complete, and a full set of wrenches.

Countershaft.—Has tight and loose pulleys, 14 inches diameter, 7 inches face, and should make 500 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Self-Feed Vertical Cut-Off Saw.



Telegraph Ciphers:
S9, 20 Inch Saw, "Anneal."
S5, 40 " " "Animal."

S5

S9

The engraving represents the largest of two sizes of vertical cross-cutting machines made by us.

Construction.—Consists of a large, heavy sole plate, on which is mounted the table and a substantial column, to the face of which the saw carriage is fitted. The carriage is counter-balanced and moved up or down by power controlled by the treadle.

Table.—The table has an adjustment to and from the column to suit different diameter of saws, also has a radial adjustment for angle sawing.

Saw Arbor.—Is made from best cast-steel, 2 inches in diameter, mounted with the pulley between good long bearings and driven from countershaft, either above or below, through a swinging arm, which always maintains a correct tension of the belt, either in light or heavy work.

Gaining.—In small shops that are not provided with a gaining machine this has proved a very useful tool. When used as such the proper heads and clamps for the table are furnished.

Capacity.—S5 will carry saws 40 inches in diameter, and cut off 13 inches square or 25 inches wide 1 inch thick.

S9 will carry saws 20 inches in diameter, and will cut off 5¾ inches thick 16 inches wide or 1 inch thick 22 inches wide.

Remarks.—This machine, owing to the self-feed feature, the adjustable table for bevel work, the gaining attachment, and the ease with which the machine can be erected in any shop, has become a favorite.

Caution.—As some unprincipled imitators are now putting on the market inferior machines, that in appearance resemble this, it will be to the interest of purchasers to see that they get none but the genuine through LONDON, BERRY & ORTON, or their authorized agents.

Speed.—S5 has tight and loose pulley, 16 inches diameter 7-inch face, and should make 350 revolutions per minute. S9 has 12 x 4 tight and loose pulleys, and should make 400 revolutions per minute.

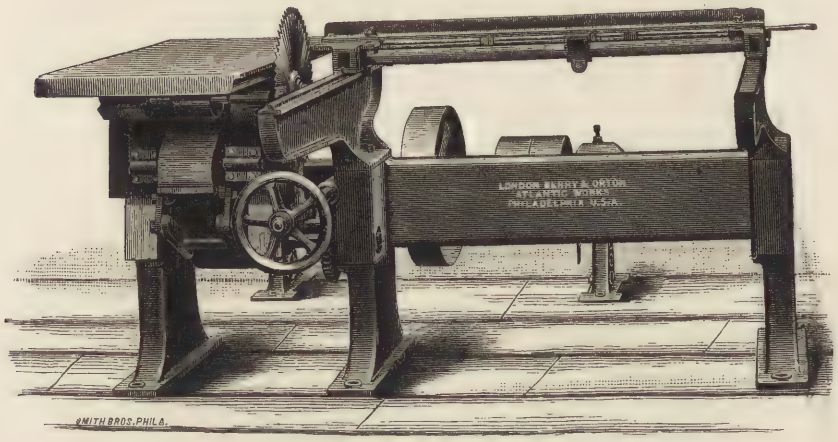
Details supplied with S5.—One 40-inch saw, countershaft complete, and a full set of wrenches; with S9 one 20-inch saw, countershaft complete, and a full set of wrenches.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

S7

Telegraph Cipher, "Animate."



Eighteen-Inch Carriage Cut-Off Saw-Bench.

Construction.—The main bed, or back line, of this machine is a rectangular cored casting, giving great strength and rigidity to the whole structure, and allows the operator to pass along with the work, instead of bending over the carriage—making it much easier to operate.

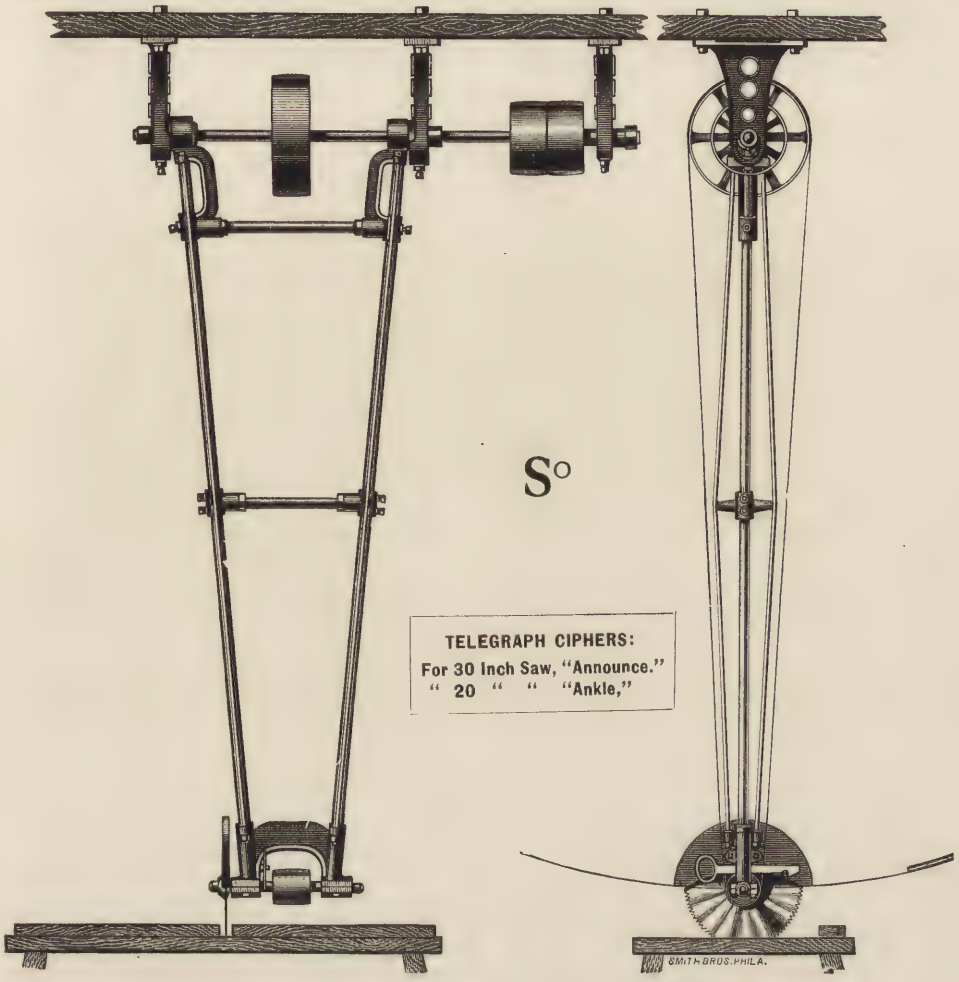
Carriage.—Is similar to those used on tenoning machines, furnished with stops and gauges for cutting off work to a given length, either square or angular.

Saw-Arbor.—Is mounted on planed slides, with the pulley between bearings; can be raised or lowered while the machine is in motion, and can be belted from a countershaft set on the same floor as the machine, or below as designed.

Countershaft.—Has tight and loose pulleys, 10 inches diameter, 4 inches face, and should make 500 revolutions per minute.

Details supplied.—One 18-inch saw, countershaft, and a full set of wrenches.

London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.



Improved Swing Cut-Off Saw.

The cut represents an improved Swing Saw. The frame is made of pipe and of any length, to suit the height of story.

The countershaft has three hangers, which places the tight and loose pulleys outside the swinging frame, which is hung on gudgeons through which the countershaft passes.

Saw.—The saw is protected by a shield and mounted on cast-steel arbor, which runs in Babbitted boxes.

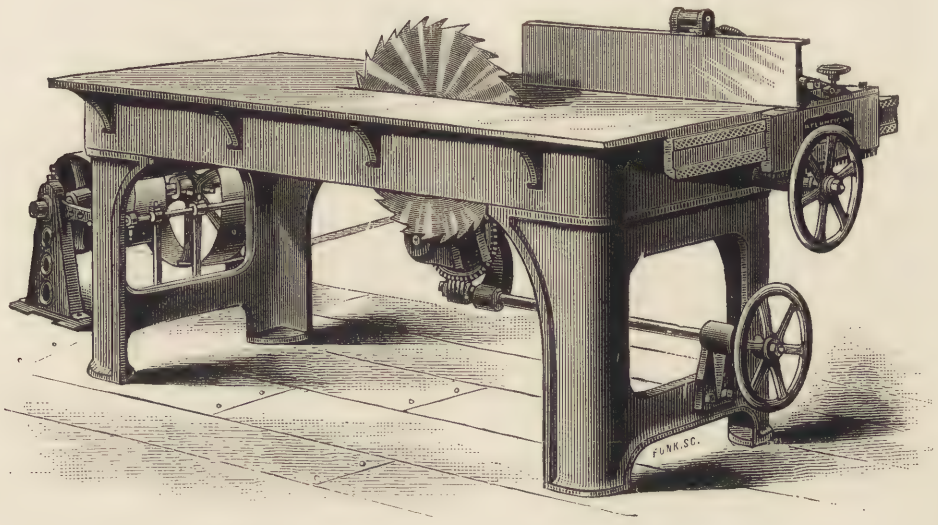
Remarks.—We make two sizes, one to carry 30-inch saws and one to carry 20-inch saws.

Speed.—The countershaft for 30-inch saw has tight and loose pulleys, 14 inches diameter, 7 inches face, and should make 330 revolutions per minute. For 20-inch saws, tight and loose pulleys, 12 inches diameter, 6 inches face, and should make 400 revolutions per minute.

London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.

S4

Telegraph Cipher, "Annual."



Thirty-Six-Inch Rip-Saw Bench.

The above bench is 40 inches wide and 99 inches long, cast in one piece, planed true, and is fitted with a loose piece for readily removing or packing the saw.

Saw Mandrel.—Is made from the best refined cast-steel, mounted in substantial bearings, and is raised or lowered while the machine is in motion, by means of a worm-wheel and screw, connected with a hand-wheel conveniently located at the end of the machine.

Gauge.—May be set either for square or bevel work, is fastened at the end of the bench, leaving the top free from holes or grooves, to obstruct lumber in sawing.

Details furnished.—One 30-inch saw, countershaft, and a full set of wrenches.

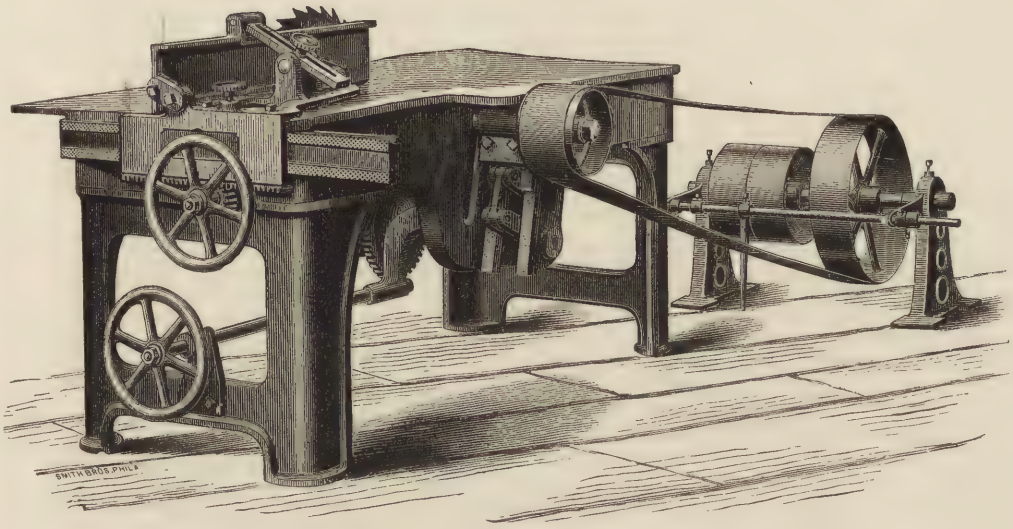
Speed.—Countershaft has tight and loose pulleys, 16 inches diameter, 6 inches face, and should make 500 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

S[2]

Telegraph Cipher, "Anoint."



Twenty-Four-Inch Rip-Saw Bench.

The above cut represents our Twenty-Four-Inch Bench. The table is 33 inches wide, 75 inches long; cast in one piece; planed true, with a loose piece for readily removing or packing the saw.

Saw Mandrel.—Is fitted in a frame that is raised or lowered by means of a worm-wheel and screw, connected with a hand-wheel, conveniently located at the front of the machine.

Gauge.—May be set either for square or bevel work, and is fastened at the end of the table, leaving the table free from holes and grooves to obstruct the movement of the lumber in sawing.

Speed.—Countershaft has tight and loose pulleys, 12 inches diameter, 5 inches face, and should make 700 revolutions per minute.

Details furnished.—One 20-inch saw, countershaft complete, and full set of wrenches.

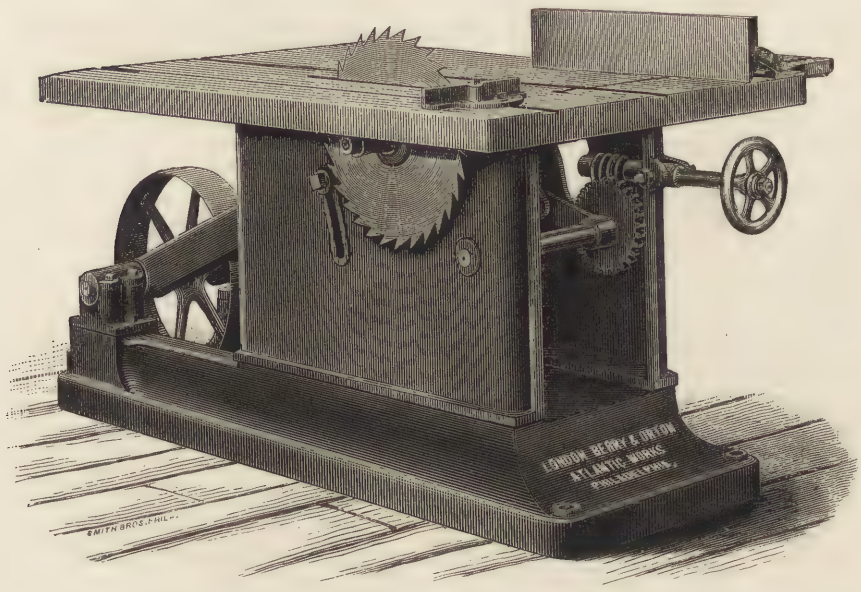
Remarks.—The mandrel and table are so arranged as to admit the use of grooving and gaining heads.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

S[6]

Telegraph Cipher, "Anon."



Eighteen-Inch Rip-Saw Bench.

The above cut represents one of the most complete Saw Benches for fine work so far produced.

Construction.—The sides and table are mounted on a heavy base plate, which also carries the countershaft and swinging arm. This arm is of good length, one end mounted on gudgeons, through which the countershaft passes; the other end, carrying the saw and mandrel, can be raised or lowered to any desired height while the machine is in motion, by turning the hand-wheel seen at the end of the machine.

Table.—Is thirty-eight inches wide and five feet long, planed true on the top and provided with bevel and square cut-off and ripping gauges; also with a loose piece, that can be removed to admit the use of heads three inches thick or less, for cornering, rabbeting, gaining, etc.

Details furnished.—One eighteen-inch saw, one cut-off and one ripping gauge, a full set of wrenches.

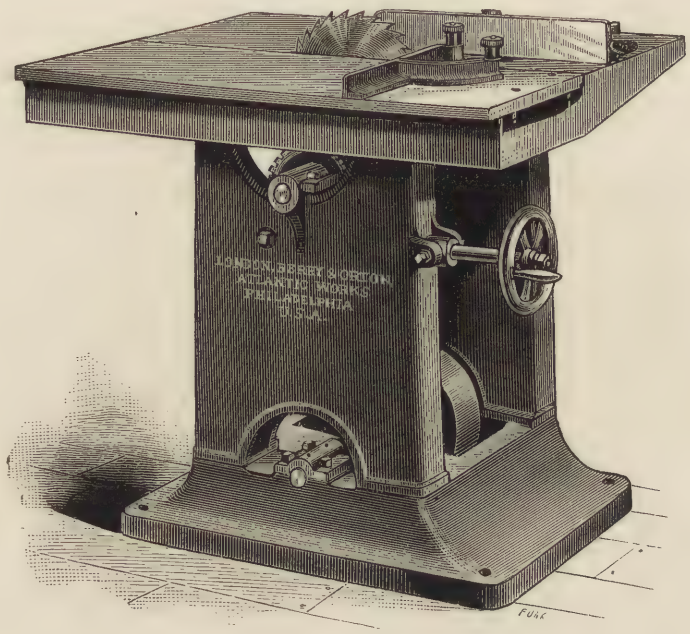
Speed.—Tight and loose pulleys are 10 inches diameter, 4 inches face, and should make 500 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

S[3]

Telegraph Cipher, "Anthem."



12-inch Rip and Cross-Cut Saw Bench.

This Machine is designed for Ripping or Cross-Cutting, and is well adapted to the requirements of pattern makers or any establishment where frequent changes are made in the character of the work.

Saws.—Two saws are used, 12 inches in diameter, one each for ripping and cross-cutting. These mandrels are mounted in a revolving frame, which in moving around brings either the Rip or Cross-Cutting saw into use, as may be desired. The frame is revolved by means of a hand-wheel shown on the left.

Tables.—Consists of two parts. The table on the right of the saw is fixed to the main frame, and has fitted in the top of it a very accurate adjustable gauge, moved approximately to any position by the hand and then clamped to a slide which is then moved by a screw for close and accurate setting. The table on the left of the saw slides easily on carefully fitted ways. It has an adjustable gauge, with an index to set it at all angles.

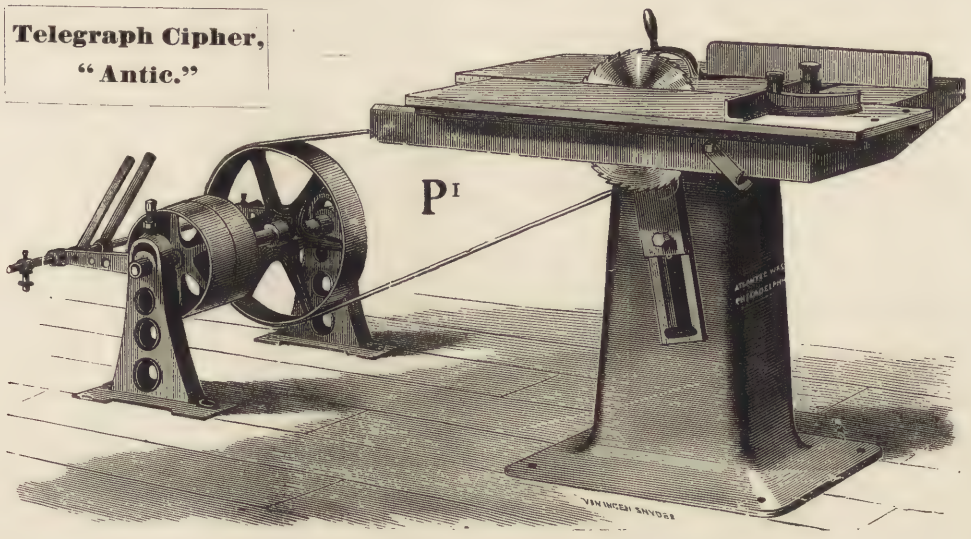
Details furnished.—One each 12-inch Ripping and Cross-Cutting saws, one each Ripping and Cross-Cutting gauge, and a full set of wrenches.

Speed.—Tight and loose pulleys are 8 inches diameter, 4 inches face, and should make 700 revolutions per minute.

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ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher,
"Antic."



14-inch Rip-Saw Bench.

This machine is arranged for doing a variety of accurate sawing, using either ripping or cross-cutting saws.

Construction.—It consists of an iron column, in which slides are arranged, in which the mandrel moves vertically to bring the saw at different heights above the table.

Table.—Is arranged in two parts. The table on the right of the saw is fixed to the column and carries the ripping gauge. The table on the left of the saw is moved on accurately planed slides and carries the cross-cutting gauge, which can be set by the index to any desired angle. Whole table is 34 inches wide and 42 inches long.

Countershaft.—Has tight and loose pulleys, 10 inches in diameter, 4 inches face, and should make 500 revolutions per minute.

Details supplied.—One 14-inch saw complete, countershaft, and a full set of wrenches.

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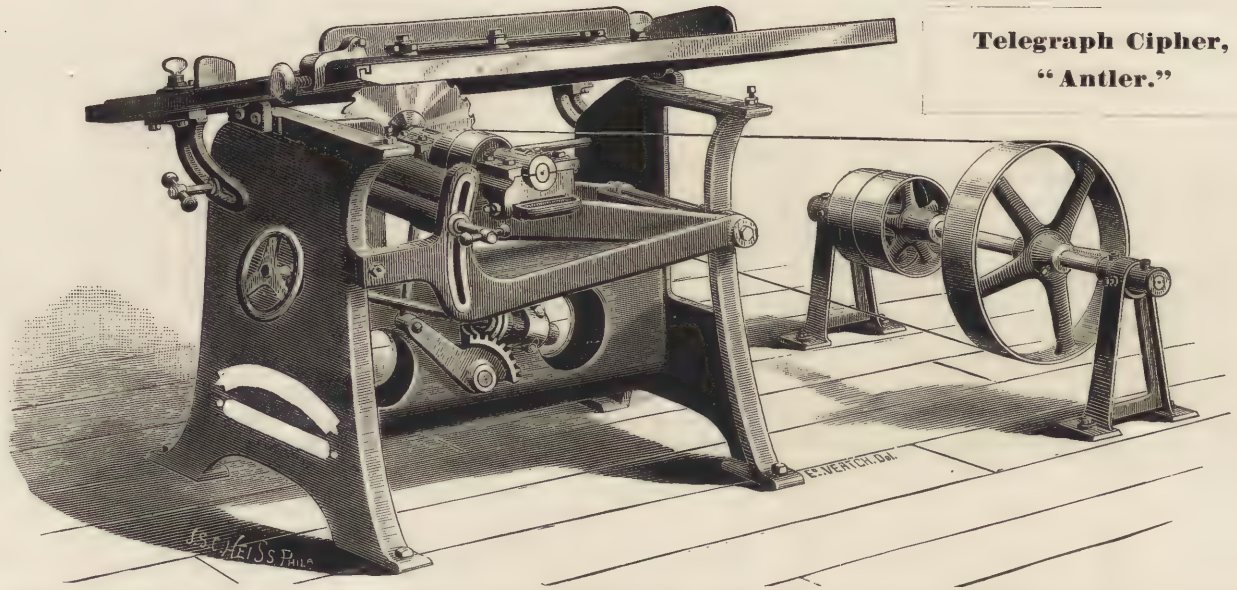
No. 3 Universal Saw Table.

The cut represents a new design extra heavy machine, with an adjustable (iron) table, 36 x 48 inches; it is positive and accurate in all the adjustments for ripping, cross-cutting, bevel sawing, mitering, mitering for taper columns, etc., and can be set to any of its various positions in a moment. The frame is cast in one piece, with the counter shaft attached. The saw arbor is driven with pulley between the boxes. The saw arbor frame has connected boxes, and arranged for every required adjustment, and is supported on a swinging frame pivoted on shaft near the counter shaft, giving the belt the same tension at any position or elevation of the saw. The swinging frame moves between planed surfaces on the inside of the main frame, and can be made rigid by the bolt with hand nut, as shown in the cut. The saw is raised or lowered rapidly by the hand-wheel operating worm and gear, with connections on both sides of the swinging frame. The table is provided with an adjustable ripping gauge and two mitre gauges; it can be adjusted to any required angle, swinging on trunnions, and is securely locked and made rigid at both ends by bolt and hand nuts. The table has projections cast on the under side with **T** slots to receive bolts to fasten extensions either to the width or length of the table. The saw arbor is made to receive dado heads, grooving saws, etc.; hole 1⅛ inch diameter. Machine is furnished with one saw 12 inches in diameter. Saws may be used up to 20 inches in diameter. Countershaft has tight and loose pulleys, 12 inches diameter, 6 inches face, and should make 650 revolutions per minute.

London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher,
"Antler."

No. 2 Universal Saw Table.

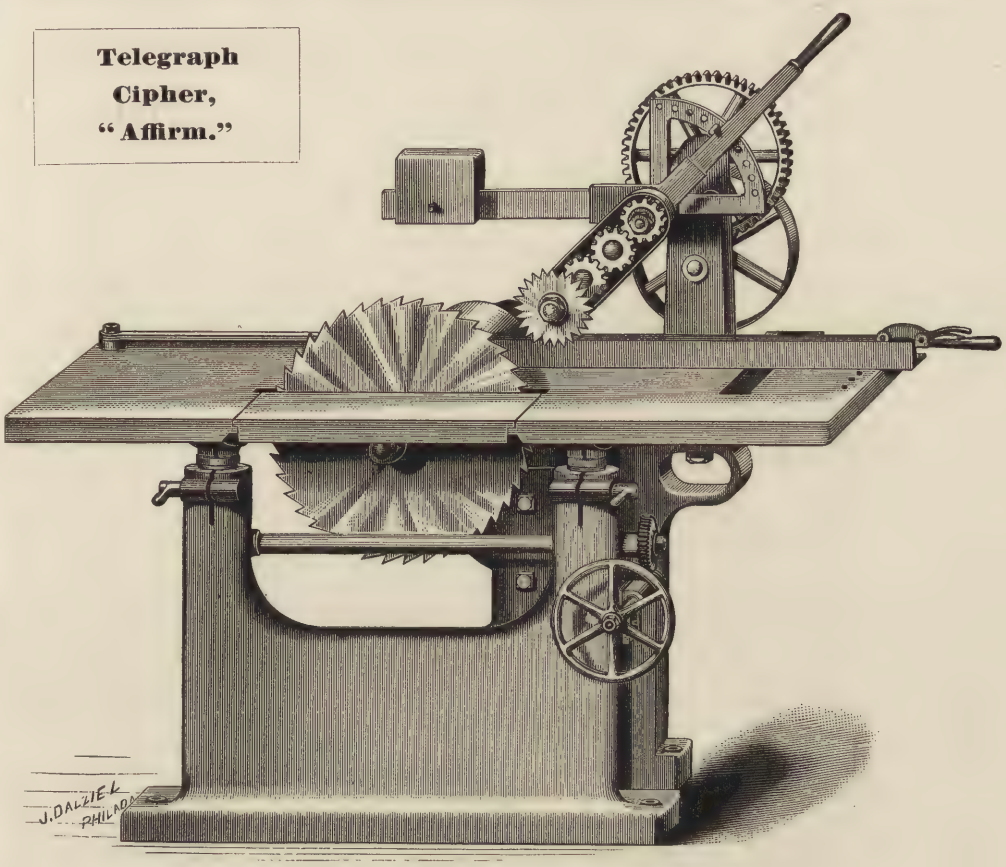


London, Berry & Orton,
Atlantic Works. Philadelphia, Pa.

The cut represents a new design machine with valuable improvements, which perfect it for all the purposes in the great variety of work to which it is adapted. It is positive and accurate in all the adjustments for ripping, cross-cutting, bevel sawing, mitering, mitering for taper columns, etc., and can be set to any of its various positions in a moment.

The iron table is three feet wide and four feet long; it has projections cast on the under side with T slots to receive bolts to fasten extensions, either to the width or length of the table. The table is provided with an improved reversible ripping gauge that can be used on either side of the saw and fastened without either slots or holes in the table; is adjustable for lead, and held positively in position where placed; also two mitre gauges working in true planed ways. The table can be set accurately at any desired angle, and held rigid at both ends by bolts across the frame. The saw arbor has long bearings, with the pulley placed between the boxes, and is made to receive saws with 1⅛-inch diameter hole. The saw arbor and swinging frame are raised and lowered by the hand-wheel operating worm and gear with quick movement. The arbor and table arranged to receive dado heads, grooving saws, etc. Saws may be used up to 20 inches in diameter. Machines are furnished with one 12-inch diameter saw and countershaft. Countershaft has fast and loose pulleys, 8 x 4 inches, and should make 500 revolutions per minute. Weight, with countershaft, 900 pounds.

Telegraph Cipher, "Affirm."



Self-Feed Ripping-Saw Table.

The above cut represents our new and improved Self-Feed Ripping-Saw Table. We would call attention to the design which is entirely new and not yet copied.

Construction.—It is a solid cored frame which supports the table; saw, mandrel and feed works in the best manner possible to assure all parts keeping their proper relation when put to heavy strains.

Table.—Is large, supported at the points of greatest strain; can be raised or lowered to any desired position, and is pivoted so as to cut at any angle.

Saw Mandrel.—Is large, mounted in large, substantial bearings, and driven with pulley between the boxes.

Feed Works.—Are very powerful, and can be swung entirely clear of the table when not in use.

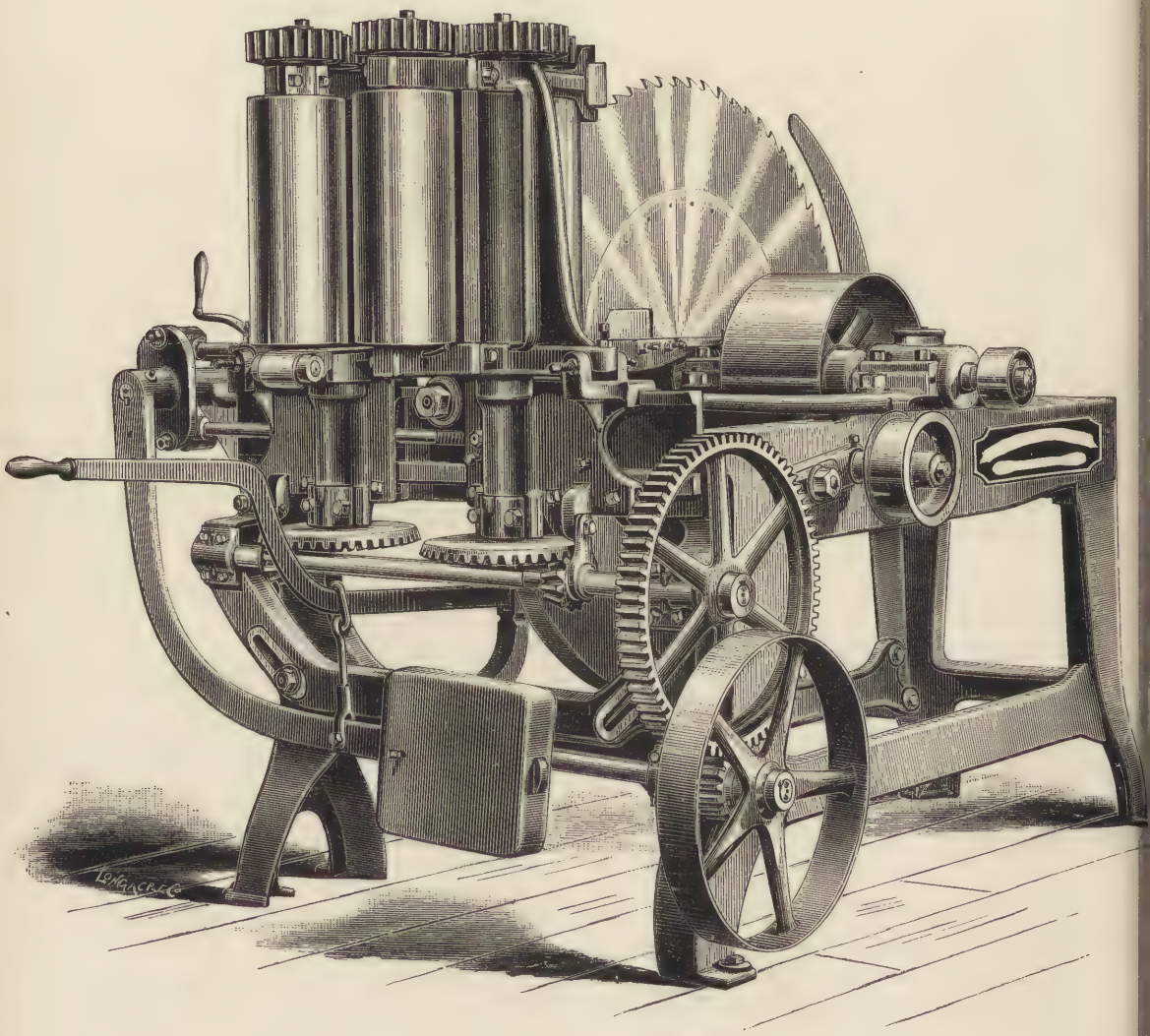
Saws.—May be used to 20 inches in diameter, are driven by pulleys on the mandrel 8 inches in diameter, 8 inches face, and should make 2500 revolutions per minute.

Details furnished.—One saw 16 inches diameter and a full set of wrenches.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Circular Re-Sawing Machine.



London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Circular Re-Sawing Machine.

This cut represents our 44-inch Re-Sawing Machine, manufactured from patterns of new design, combining several improvements for strength and quick adjustments. The feed rolls are of large diameter, all driven by strong gearing; the pressure being controlled by one weight, they are positively self-centering; can be adjusted for slicing, and set at any required angle for bevel sawing by one screw; will admit lumber up to six inches in thickness and by means of the handle connected to the weight can be immediately released from the work. The saw arbor is of large diameter, running in connected boxes, which are fitted in planed slides to move saw to and from the feed rolls, and arranged to receive driving pulley 18 inches diameter if required. The table is constructed for independent movement in planed ways, to and from the feed rolls for suitable adjustment to the diameter of saw used, and is hinged to swing to remove saw from the arbor. We manufacture on same principle of construction machines for saws from 24 to 44 inches in diameter. Machines furnished with segment saws when ordered at special price.

						TELEGRAPH CODE.
24 inch	without	steel	flanges,	splits,	10 inches,	"Anvil."
24 "	with	"	"	"	10 "	"Apace."
30 "	without	"	"	"	13 "	"Apart."
30 "	with	"	"	"	13 "	"Ape."
36 "	"	"	"	"	15½ "	"Apex."
42 "	"	"	"	"	18½ "	"Aping."
44 "	"	"	"	"	19½ "	"Apish."

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Patent Scroll Sawing Machines, Nos. 1 and 2.

The cut represents the No. 1 machine with tilting table, which can be set in a moment to any desired angle, either right or left, up to 39 degrees. The frame is one solid casting. The bed is made of glued-up strips of cherry and ash, 38 x 40 inches. The springs, air pump, guide-ways, cross-head and steel bearing, with all their connections, are attached to the tubular shaft *S*, secured to the heavy back support by the box *E*, and eccentric lever *F*. By raising lever *F*, this shaft being balanced by spring *O*, is free to move up and down to suit any length of saw. The steel bearing *L* forms support for back and sides of saw, and can be raised and lowered. The under guide-ways are new, and so made that expansion by heating cannot tighten the cross-head, causing saw to run always in perfect line. The guide-ways are set square with the bed and are never changed. All lost motion is taken up in the cross-head. The lower end of saw is held by a self-acting steel clamp, without pins or holes in end of saw. Each machine has the friction pulley and combination brake, starting and stopping instantly by a single movement of the foot and without shifting the belt.

Size of driving pulley, 8¾ x 3 inches. Speed, 800 revolutions.



The No. 2 machine is in every way like the No. 1, except the bed stationary.

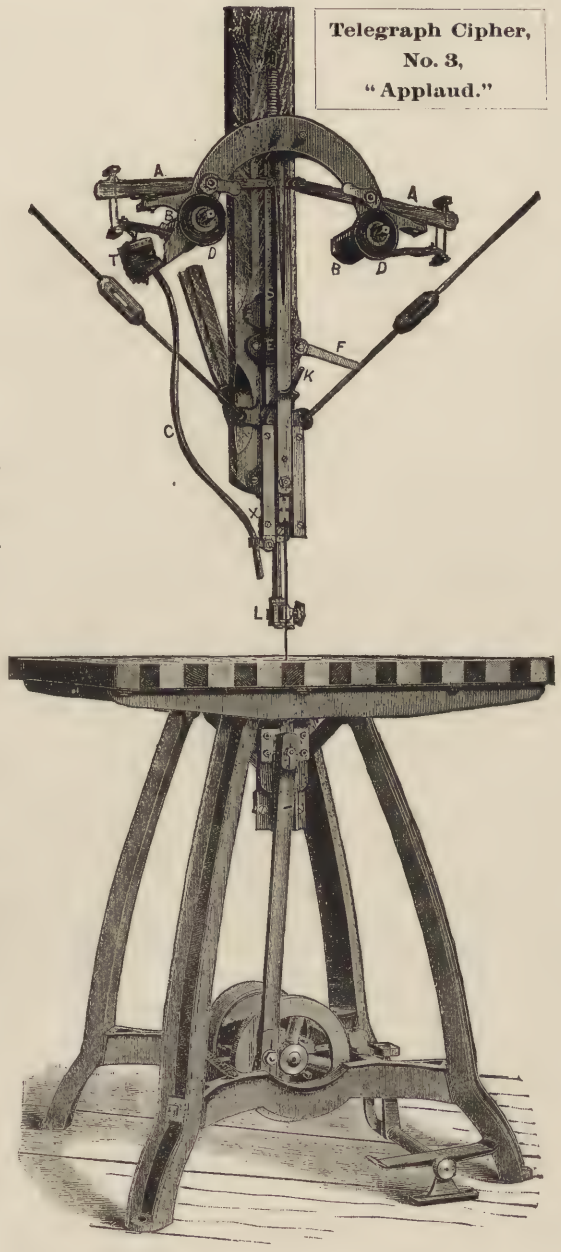
London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.

Patent

Scroll Sawing Machine,

No. 3.



Telegraph Cipher, No. 3, "Applaud."

The No. 3 machine has a heavy cast base for supporting crank-shaft; the legs have their upper ends bolted to a second-cast frame independent of the bed, so placed that one forms a brace for each of the others, making a solid, rigid, durable frame.

The bed is 36 x 33 inches, made the same as Nos. 1 and 2.

The upper rigging, or straining device, is the same as the No. 1, except the stick **W** takes the place of the cast-back support.

Size of driving pulley, 8¾ x 3 inches.

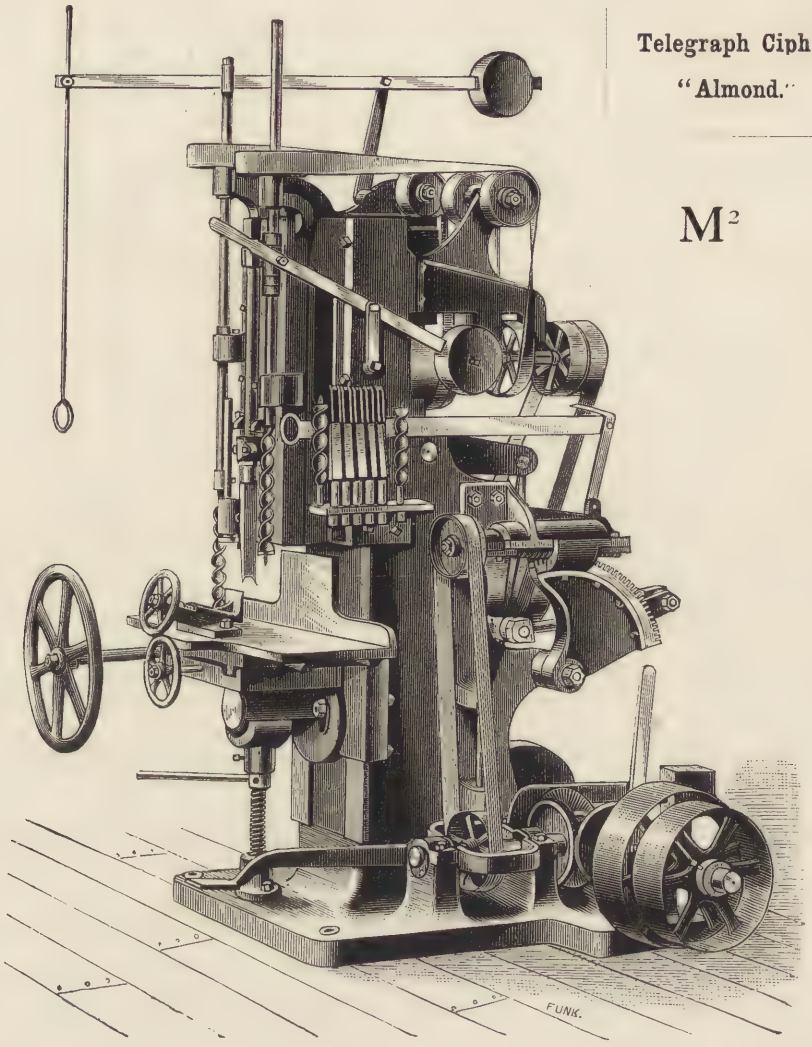
Speed, 800 revolutions.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher,
"Almond."

M²



Combined

Mortising and Boring Machine.

Large Size, for Heavy Work.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Combined

Mortising and Boring Machine.

Large Size, for Heavy Work.

The engraving is a perspective view of a strong, reciprocating Mortising Machine, with two boring spindles, one to bore in the line of mortises only, and the other with a transverse adjustment (across the lumber), so as to bore holes at any point. The boring spindles are not run by gearing, consequently run much faster and smoother.

The carriage for holding the lumber has a compound adjustment, and it is pivoted to permit angular mortises to be made, and will receive lumber 14 inches square; the machine will work a mortise 9 inches from the back face of the lumber.

The depth of the mortise or the movement of the chisel bar is graduated at will from 0 to 8 inches deep; this is done by power, controlled by the foot of the operator, giving the treadle about 2 inches movement.

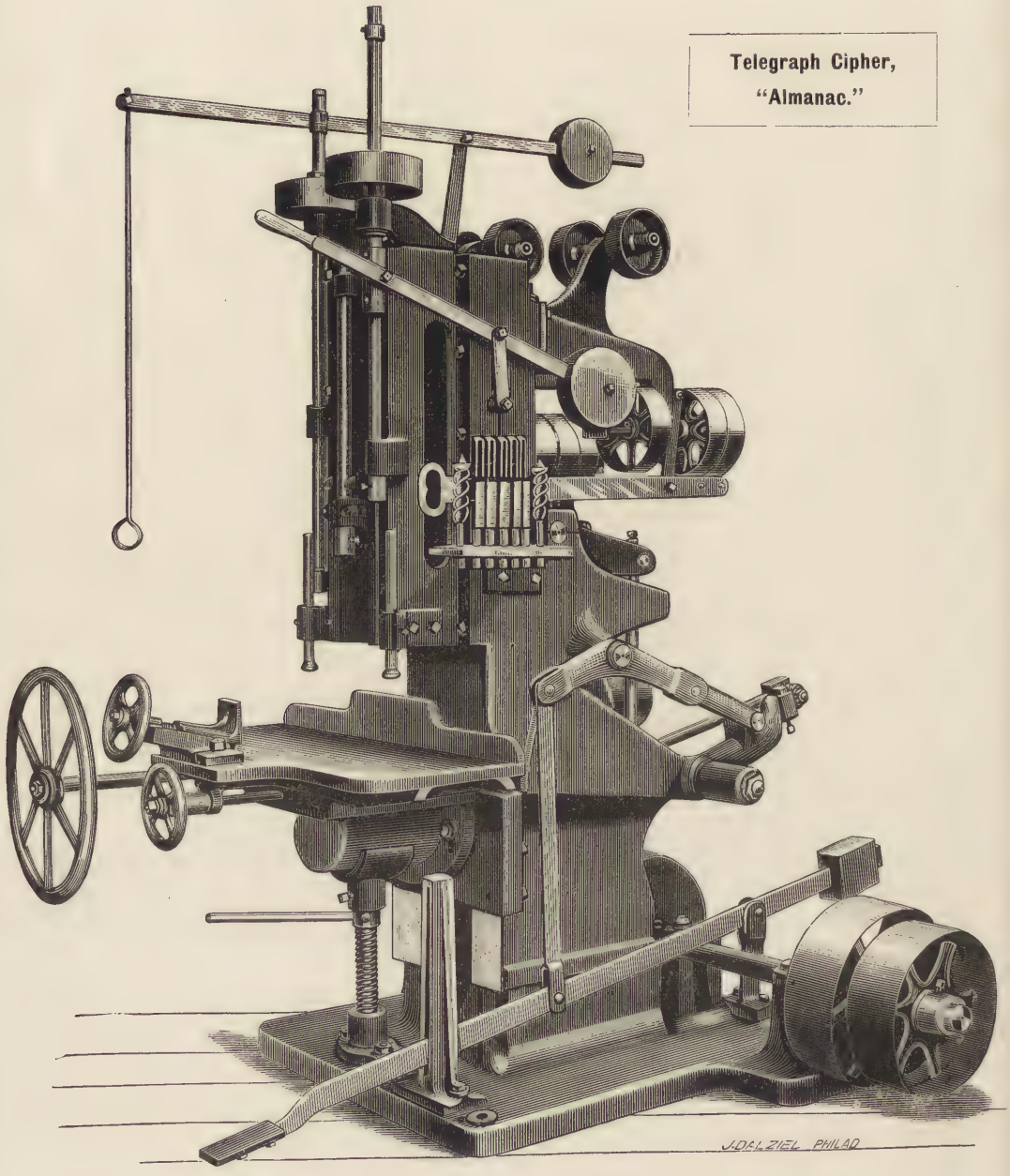
There is no jar to the operator. The reverse movement of the chisel bar is controlled by stops which are automatic.

Each machine is furnished with one countershaft (which operates the chisel bar and both boring spindles), 6 chisels and augers from ½ inch to 1½ inch, and four long augers.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher,
"Almanac."



Extra Heavy
Car Mortising and Boring Machine.

Extra Heavy Combined Mortising and Boring Machine.

The engraving on the opposite page represents our Extra Heavy Mortising and Boring Machine, designed specially for car work.

Construction.—The machine is self-contained, the parts being all attached to a heavy frame. The crank-shaft, which is located at the base, is arranged to give a stroke of either 6 or 8 inches to the chisel bar, and has two changes of speed.

Boring Spindles.—It has two boring spindles, one placed accurately in line with the chisel bar, so that holes bored will coincide with the chisel and the other so as to have a traverse adjustment across the timber and bore holes at any point. They are both driven by belt, and can be run at any speed, without noise or annoyance, as is the case when driven by small bevel gears.

Chisel Bar.—Has a graduated stroke; is operated by the treadle from a standstill about one inch above the work. It works gradually down to full stroke, and is held there without the least jar to the operator, and when released returns instantly to its point of rest.

Table.—The Table is made very heavy, with compound movement, also with an adjustment for bevel mortises. A vertical adjustment of the table admits of various widths of timber being worked. The timber is clamped and moved along by rack and pinion; will receive timber 14 inches square and take in 9 inches from the back of the table to centre of mortise. End sills for cars can be mortised without turning.

Details supplied.—A set of chisels is supplied of the following sizes: ½ inch, ⅝ inch, ¾ inch, 1 inch, 1¼ inches and 1½ inches, with boring bits to correspond; also, 4 long bits, 9, 11, 13 and $\frac{15}{16}$ inch, for the auxiliary boring attachment, countershaft and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 12 inches diameter 5 inches face, and should make 250 revolutions per minute.

Remarks.—It will be noticed that this machine is wholly supported on a foundation, and does not require to be fastened at the top. This is a matter of importance, as in most works there are no overhead attachments, and special framing has to be erected.

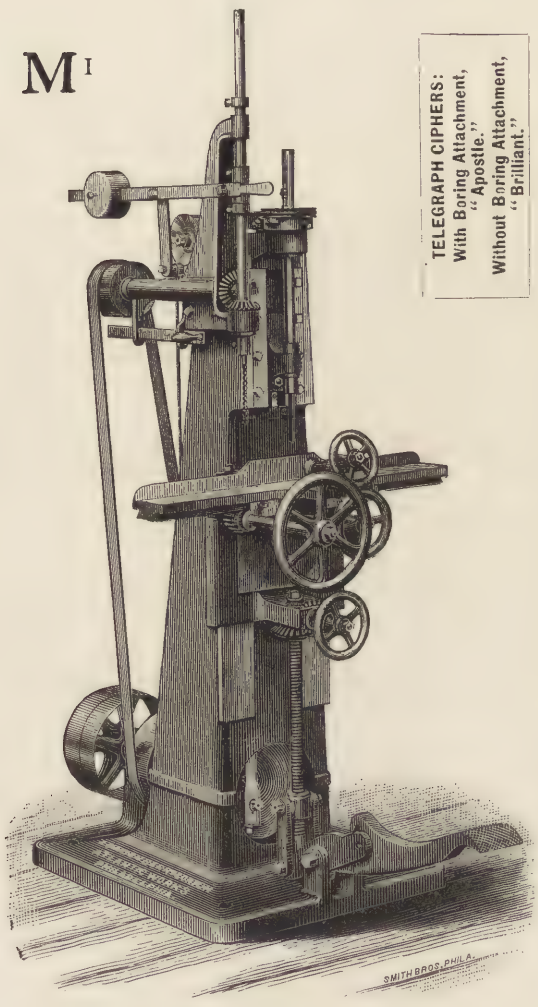
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Mortising and Boring Machine

For Joiner, Cabinet and other Light Work.

M[1]



TELEGRAPH CIPHERS:
With Boring Attachment,
"Aposile."
Without Boring Attachment,
"Brilliant."

This engraving represents a High-Speed Machine, with boring attachment and compound table. For hard woods it has no equal.

Chisel Bar.—Is reversed by power and has a uniform stroke of 4½ inches, the table with the lumber being raised by the jointed treadle, which can at all times be kept as near the floor as possible and avoid raising the foot higher than necessary.

Crank-Shaft.—Is placed at the base, and the machine will stand on a foundation without bracing at the top.

Table, to support the lumber, is made with a compound slide, clamp for holding, arranged to swivel for bevel mortising and moved by a rack and pinion through hand-wheel shown in front.

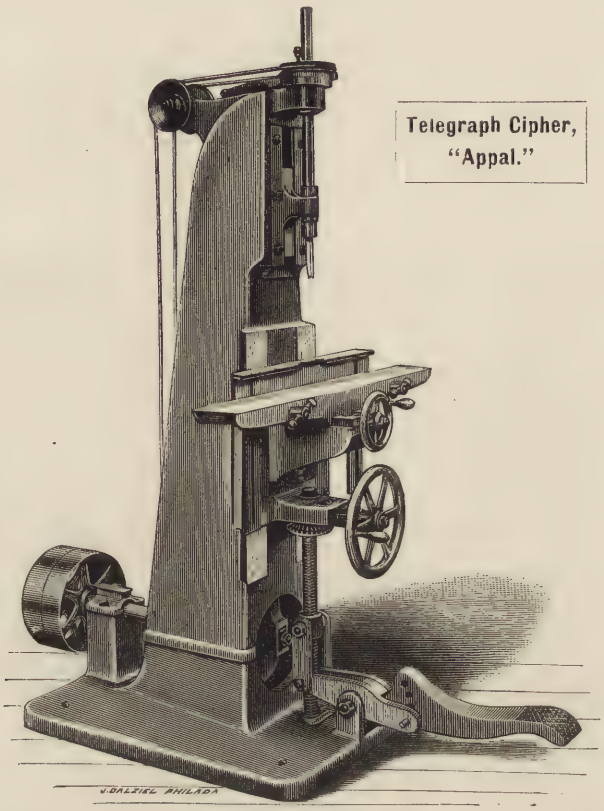
Boring.—It has a boring attachment, accurately set on the side, so as to bore holes to coincide with the chisel, and is in all cases recommended where hard wood is to be mortised.

Details furnished.—One each ¼, ⅜, ½, ⅝ and ¾ inch chisels, with auger bit to match, belts for reversing chisel and running boring attachment and a full set of wrenches.

Speed.—Machine has tight and loose pulleys 12 inches diameter 3 inches face, and should make 500 revolutions per minute. Can be belted from any direction.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



Telegraph Cipher,
"Appal."

Small Mortising Machine for Sash, Door and Blind Shop.

The engraving represents a High-Speed Machine, which may be driven at from 400 to 500 revolutions per minute. The crank-shaft is placed at the base, and the machine will stand on a foundation without bracing at the top.

Chisel Bar.—Is reversed by power and has a uniform stroke of 4½ inches; the table with the lumber being raised by the jointed treadle, which is always kept as near the floor as possible.

Table.—The plane table is arranged for bevel work, has a gauge on the back, and is especially suitable for soft wood and the lighter kinds of work.

Details furnished.—One chisel, each ¼, ⅜, ½, ⅝, and ¾-inch, belt for reverses, and a full set of wrenches.

Speed.—Machine has tight and loose pulleys, 12 inches in diameter 3 inches face, and should make 500 revolutions per minute. Can be belted from any direction.

London, Berry & Orton,

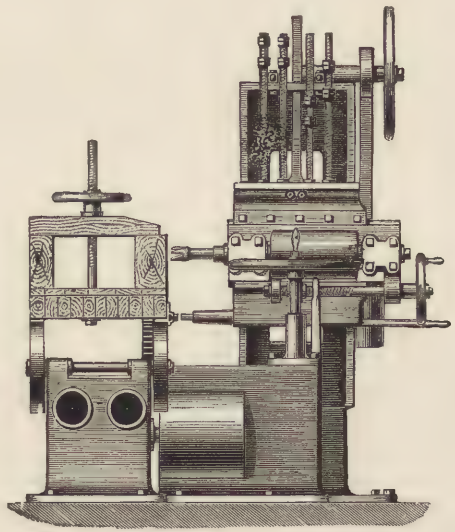
Atlantic Works, Philadelphia, Pa.

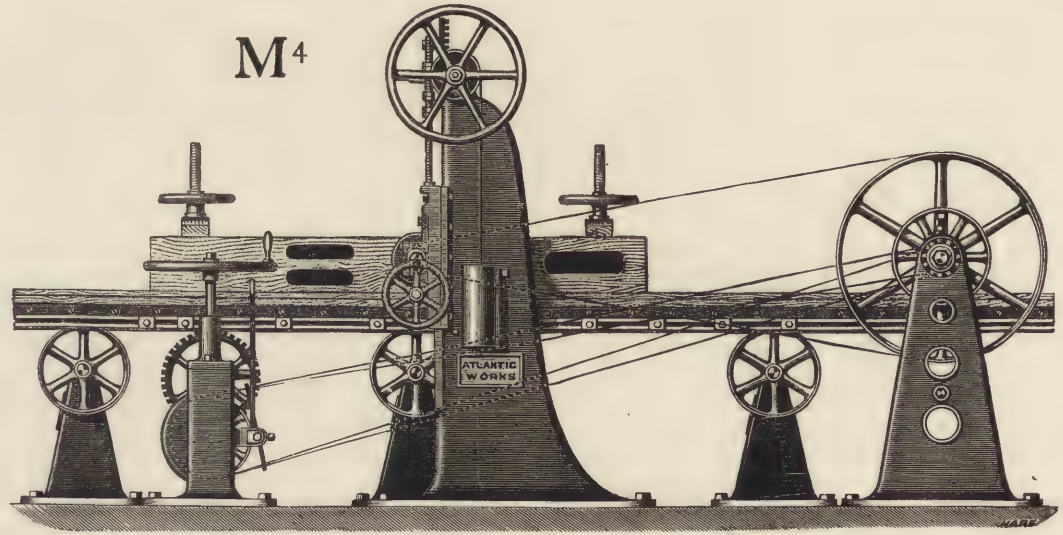
TELEGRAPH CIPHERS:						
With Carriage	16	feet	long,	.	.	"Apparel."
" "	20	"	"	.	.	"Appeach."
" "	25	"	"	.	.	"Alpine."
" "	30	"	"	.	.	"Brimful."
" "	35	"	"	.	.	"Aloud."
" "	40	"	"	.	.	"Aloof."
" "	50	"	"	.	.	"Alms."
" "	60	"	"	.	.	"Afflict."

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

M⁴





Rotary Mortising, Boring and Recessing Machine.

Rotary
Mortising, Boring and Recessing Machine,

Especially for Railway Car Work.

The machine shown opposite is for preparing sills or other parts of railway cars requiring to be mortised, bored or recessed. It is one of the most efficient machines for the purpose ever produced, and saves a considerable part of the labor and expense in constructing railway carriages of any kind. All the different operations are performed on a piece at one time without laying out, and without chance of mistake.

The vertical position of the spindle is governed by eight stops, which can be set to regulate the lateral position and width of mortises or recesses; while the carriage is provided with a large number of similar stops to determine the length of mortises, and their position lengthwise of the lumber.

When the stops are once set for some special kind of work, their position can be marked, and a record kept, so that when similar work is to be done, no time or skill is required to set the machine, and no marking out necessary.

The carriages are mounted on large iron rollers, so as to be easily moved by hand. There is, besides, gearing to move the carriages by power, at the rate of 200 feet per minute.

The carriage roller-stands are each independent, and adjustable, so as to be kept in line. There is a space of several feet between them, and they offer no obstruction to the floor, like a continuous frame.

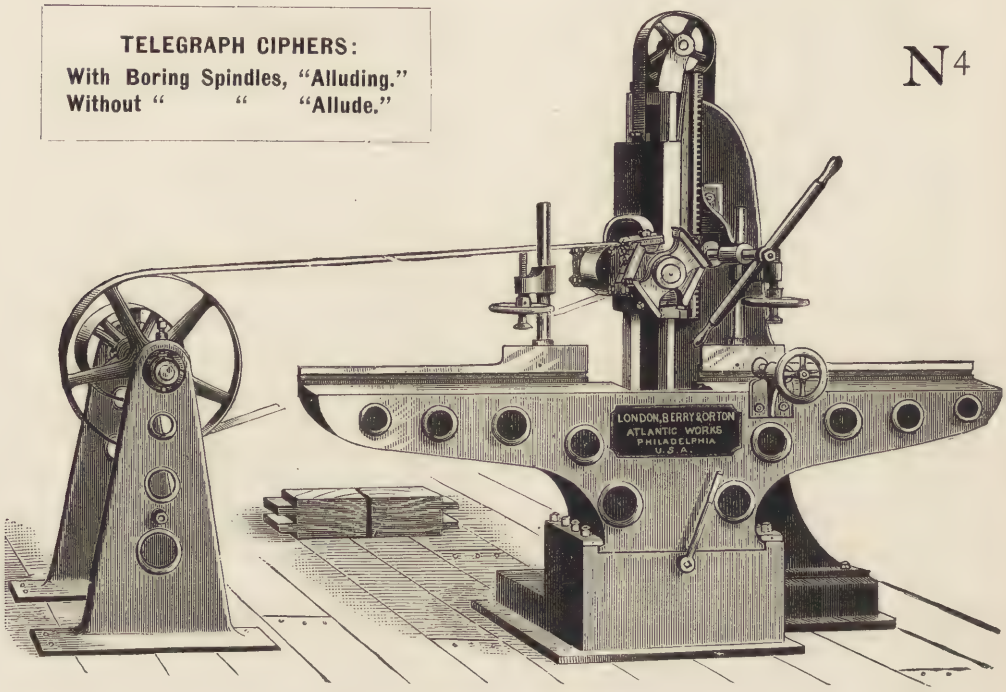
A Horizontal Boring Machine is often attached (is not shown in cut) to this machine, and so arranged that one man can run both machines, and in that way do all the mortising, recessing, gaining, cornering, and boring on a sill before it is taken from the carriage.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

TELEGRAPH CIPHERS:
With Boring Spindles, "Alluding."
Without " " "Allude."

N4



Tenoning Machine for Car Shops.

The object of this machine is to form single and double tenons on long sills without turning them about, or for cutting timber ends into any shape required (as any shape cutter can be placed on the heads).

Lumber 16 inches thick and 14 inches wide can be worked.

The machine as made now has four clamp screws—2 vertical and 2 horizontal—for holding the timber during cutting.

The cutter-heads and frame are counterbalanced. The knives are made in the shape of an adze so as to cut easily, and they are bolted on to moulded steel heads.

The machine is furnished with a countershaft and one 2-inch and two 3-inch heads and cutters.

When required we put horizontal boring spindles on each end of the bed, so arranged that we can bore in the ends of sills for joint bolts, and they are operated independent of the machine, and are entirely out of the way when not wanted.

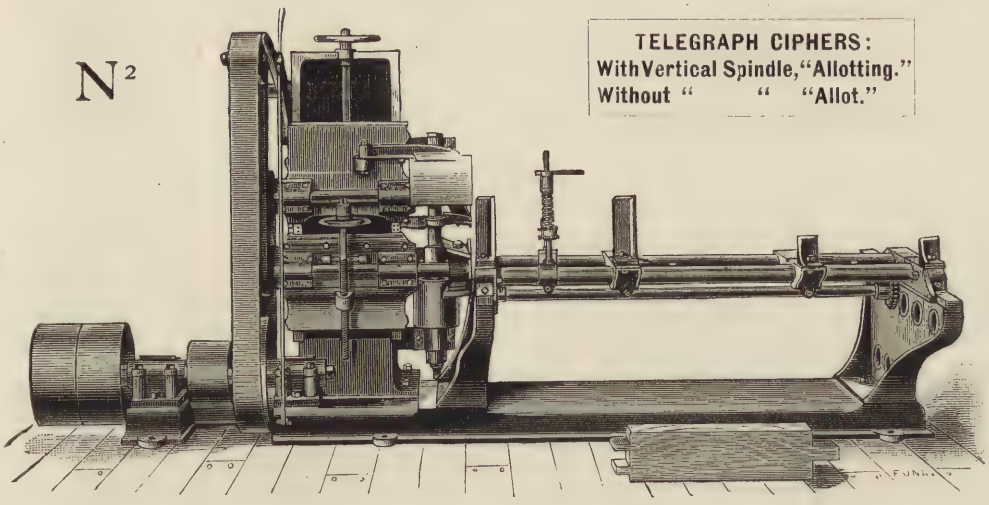
The machine is not belted as shown in the cut, but from overhead or under the floor as desired, and in such a manner as to keep equal tension on the belt during the entire movement of the cutter-heads.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

N^2

TELEGRAPH CIPHERS:
With Vertical Spindle, "Allotting."
Without " " "Allot."



Large Carriage Tenoning Machine,

For Car Works, for Single or Double Tenons.

The engraving shows side view of a strong Tenon Machine, with a carriage mounted on rollers, arranged for the heavier kinds of work. The machine, as shown, is for single and double tenons, and can be arranged for double tenons by adding a vertical spindle, with cutters acting between those seen in the engraving.

This machine is well adapted for cutting tenons on short lumber of any size to 12 inches square, and is recommended for railway carriage works when only one machine is employed. By constructing some devices to assist in moving and turning long pieces, all the tenons, both double and single, including light work for passenger carriages, can be done on the same machine.

The several parts of the machine are all bolted to a strong sole plate, five inches deep, which keeps the whole true and in line.

The carriage is constructed of wrought and cast iron, and moves on large rollers, so that but little effort is required to move the heaviest pieces. The friction of angular guides is avoided by employing a squaring shaft provided with gear wheels, which cause the ends to move uniformly.

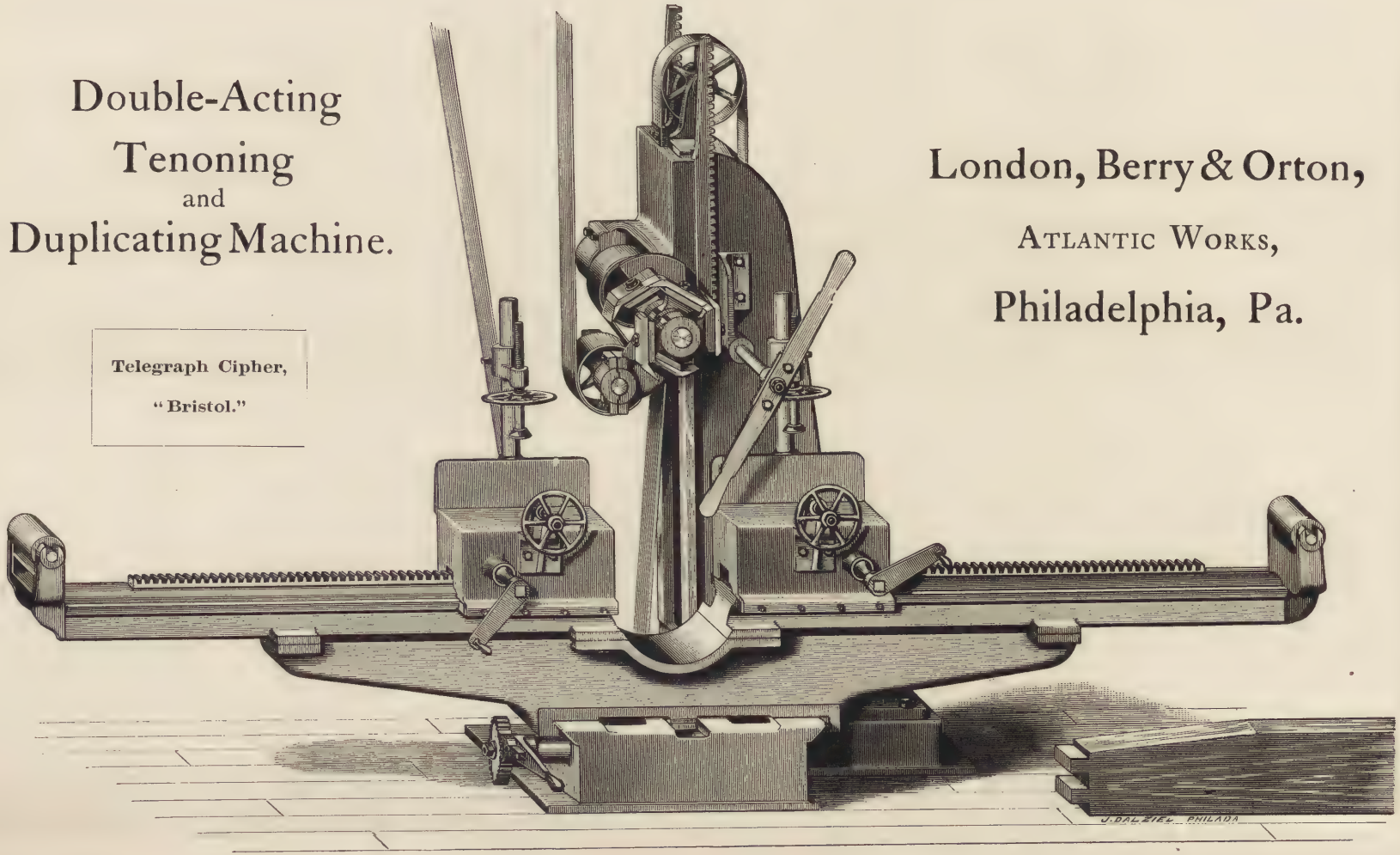
The cutter-heads are ten inches diameter, and the spindle pulleys eight inches diameter, driven by a belt five inches wide.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Double-Acting Tenoning and Duplicating Machine.

Telegraph Cipher,
"Bristol."



London, Berry & Orton,
ATLANTIC WORKS,
Philadelphia, Pa.

Double-Acting Tenoning and Duplicating Machine.

The machine represented by the engraving on opposite page is one of our latest, designed to form single, double, or triple tenons on both ends of long sills or other pieces without turning them about; also, to duplicate irregular work from a pattern, as in beveling the outside sills of flat cars.

Cutter-Heads.—One each, 2, 3 and 6 inches wide, are mounted on a heavy crucible steel mandrel, which is mounted in a heavy counterbalanced carriage and traversed vertically on a column by means of a hand lever.

Tables.—Are arranged with two movements, one across the heads to locate the tenons and the other lengthwise of the table to cut duplicate work.

Countershaft.—Is placed over the machine, the belt always holding the same tension during the entire movement of the cutter-heads.

Knives.—Are ¾ inch thick and are shaped like an adze, so as to cut easily and not become dull until considerable work has been performed.

Capacity.—The table receives timber 16 x 14 inches and is only limited in amount of work done by the quantity of material presented. Each table is provided with a horizontal and vertical clamp screw, for holding the timber, and also a rack movement, for moving it endways.

Speed.—Countershaft has tight and loose pulleys, 14 inches diameter 6 inches face, and should make 600 revolutions per minute.

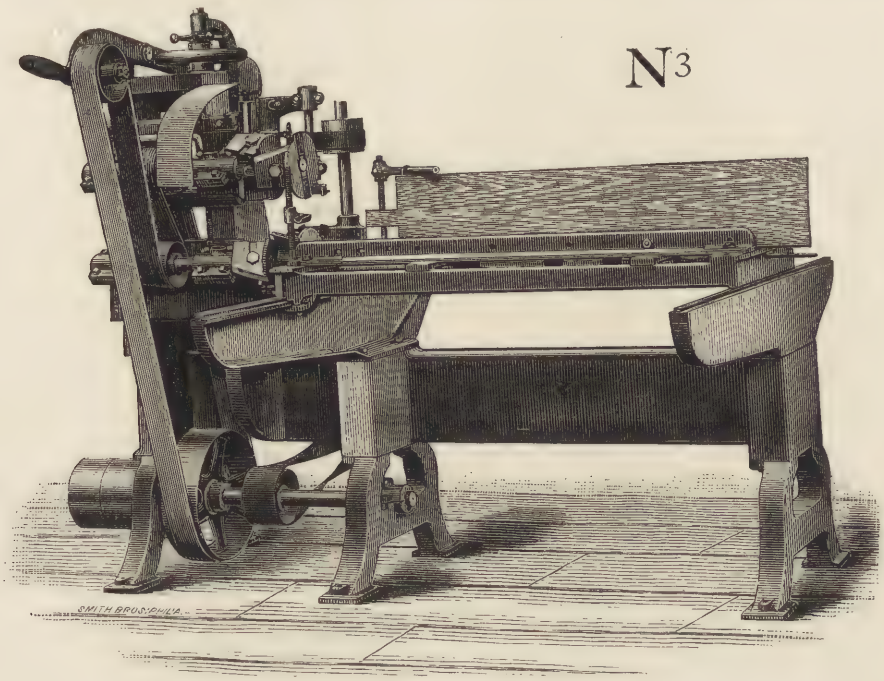
Details supplied.—One each, 2, 3 and 6 inches, steel heads and cutters, countershaft, and a full set of wrenches.

Remarks.—As the capacity of this machine is seldom taxed to its utmost, we have made some important changes by which its field of usefulness has been much enlarged, and much work usually done by hand will find its place here. This machine as now built is the most complete End Tenoner in existence.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

TELEGRAPH CIPHERS:	
Double Heads and Double Copes, "Allay."	Single Heads and Single Copes, "Alight."
Single " " " " "Alliance."	" " " without " "Alert."



Standard Tenoning Machine.

For Sash, Doors, Blind and Cabinet Work.

This machine differs from any in the market, in having the frame made to allow the operator to pass along with the work with his body, instead of bending over the carriage, making it much easier to operate.

The machine has all the necessary adjustments of cutter-heads, copes, etc., stops on carriage, etc.

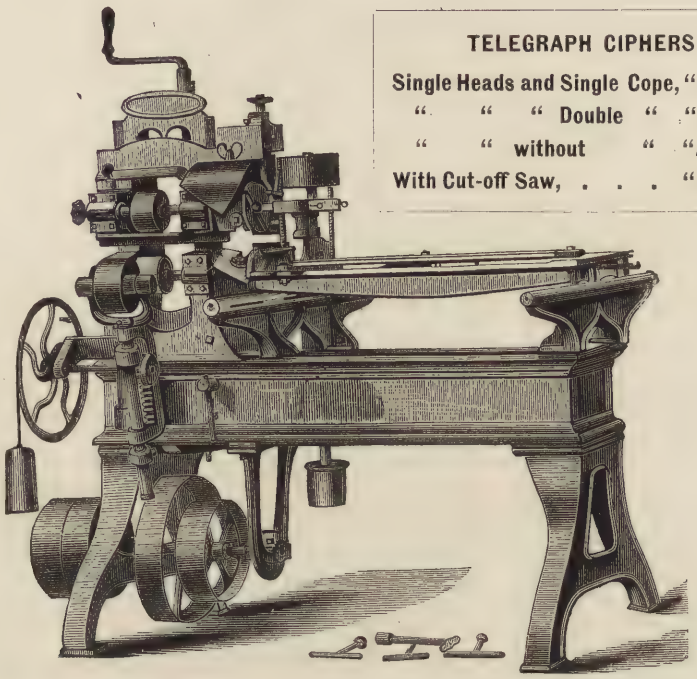
The upper head will raise 8 inches above the table, and will cut tenons 7½ inches long.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

TELEGRAPH CIPHERS:

Single Heads and Single Cope,	"Albert."
" " " Double "	"Alarm."
" " without "	"Alcove."
With Cut-off Saw, . . .	"Album."



Sash and Blind Tenoning Machine.

The cut represents an Improved Tenon Machine, built of iron and steel, with all improvements, and is well adapted to work for sash and blinds, and in cabinet and furniture factories. The top headstock is adjustable up and down, and in and out, and both top and lower headstocks can be moved up and down together without changing the thickness of the tenon. When desired, the machine is made with cut-off saw attachment, which is adjustable to any length of tenon desired, and the saw arbor is driven by the same belt that drives the heads. Tight and loose pulleys, 10 inches diameter, 4 inches face; speed, 900 revolutions per minute. Weight, 750 pounds.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



Telegraph Ciphers:

Self-Feed, . "Asleep."
Hand " . "Aspect."

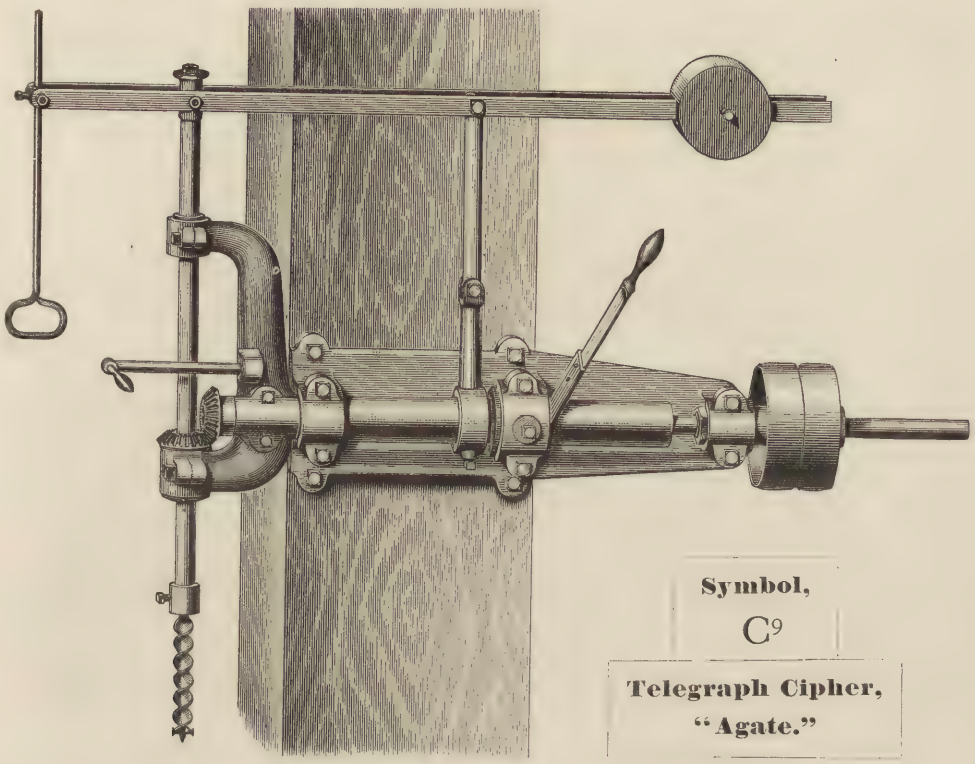
Blind Slat Tenon Machine, (Self-Feed).

This cut represents our new and improved Self-Feed Blind Slat Tenon Machine, which in construction is altogether different from any machine of the kind ever placed on the market, and we claim that double the number of slats can be tenoned upon it that can be done upon any other Self-Feed Tenoner. The Lever which operates the Feed-Works is convenient to the operator, and raising it brings the head holding the slat against the saws, which make the tenon. At this point it is released from the stop, and the head is allowed to revolve, making one revolution, and again coming in contact with the stop, when it is ready to make another tenon. We claim a grand advantage over all other Tenon Machines in making short slats, as we have only one set of Slat Holders to adjust and keep in line, and we can readily tenon slats as short as ½ inch in length. The adjustments for changing from wide to narrow slats are very simple and handy. No manufacturer of blinds can afford to be without one of these machines in his factory.

The tight and loose pulleys are 8 inches in diameter by 2½ inches face, and should make 900 revolutions per minute. We furnish the belts as shown in cut.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



Symbol,
C9
Telegraph Cipher,
"Agate."

Universal Post Boring Machine.

Designed for any and all kinds of boring, but more specially to large timber, when it will be found easier to move the boring spindle than the timber to be bored. It is self-contained, with tight and loose pulleys, and can be fastened to a post in the most convenient place to suit the work and operator.

Capacity.—The boring spindle has a vertical movement of 12 inches, a transverse adjustment across the timber of 8 inches, and may be set to bore either square or angular holes.

Speed.—The machine is provided with tight and loose pulleys, 8 inches diameter, 2 inches face, and should make 1000 revolutions per minute.

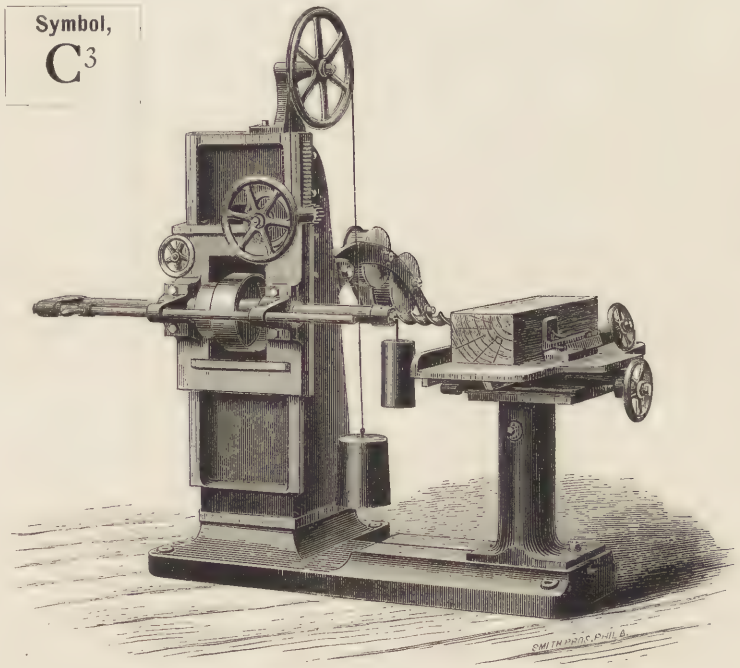
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

Fig. 1.

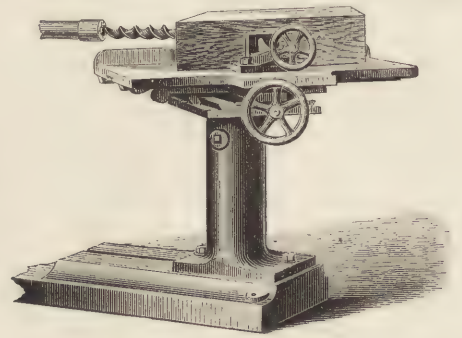
Symbol,
C^3



Showing table arranged to bore in the side of timber.

Telegraph Cipher,
"Akin."

Fig. 2.
Showing table arranged to bore at any angle.



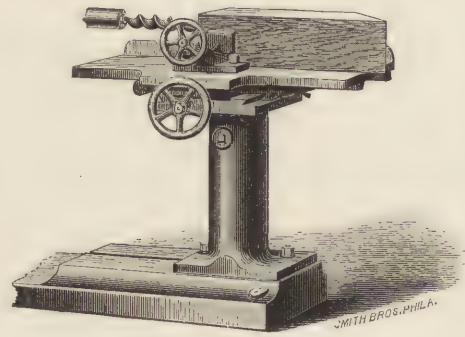


Fig. 3.
Showing table arranged to bore in the end of timber.

Universal Horizontal Boring Machine.

Universal Horizontal Boring Machine.

This machine is designed for general framing purposes, but more particularly for car building; and for holes in truck and body bolsters it has no equal.

Spindle.—Is made from cast-steel 2¼ inches diameter, has a horizontal movement of 24 inches and a vertical movement of 14 inches, is bored to receive bits with shanks ¾ inch diameter, and fitted with a reducer to receive ½ inch, and driven by a cone pulley through a swinging arm which always maintains an equal tension of the belt; both the saddle and spindle are counterbalanced by a weight and quickly adjusted to the work by rack and pinion through the hand-wheel shown.

Table.—Receives timber 14 inches square, and is mounted on the same substantial base as the column; has a movement to and from it, a compound and also a radial movement, so that when set at any desired angle, as shown by Figs. 1, 2 and 3, the holes can be bored in any part of the side or end of the timber presented to the bit.

Remarks.—In operating this machine, the operator stands with the spindle at his side and the work in front of him, thereby being enabled to do the boring with greater ease, accuracy and dispatch.

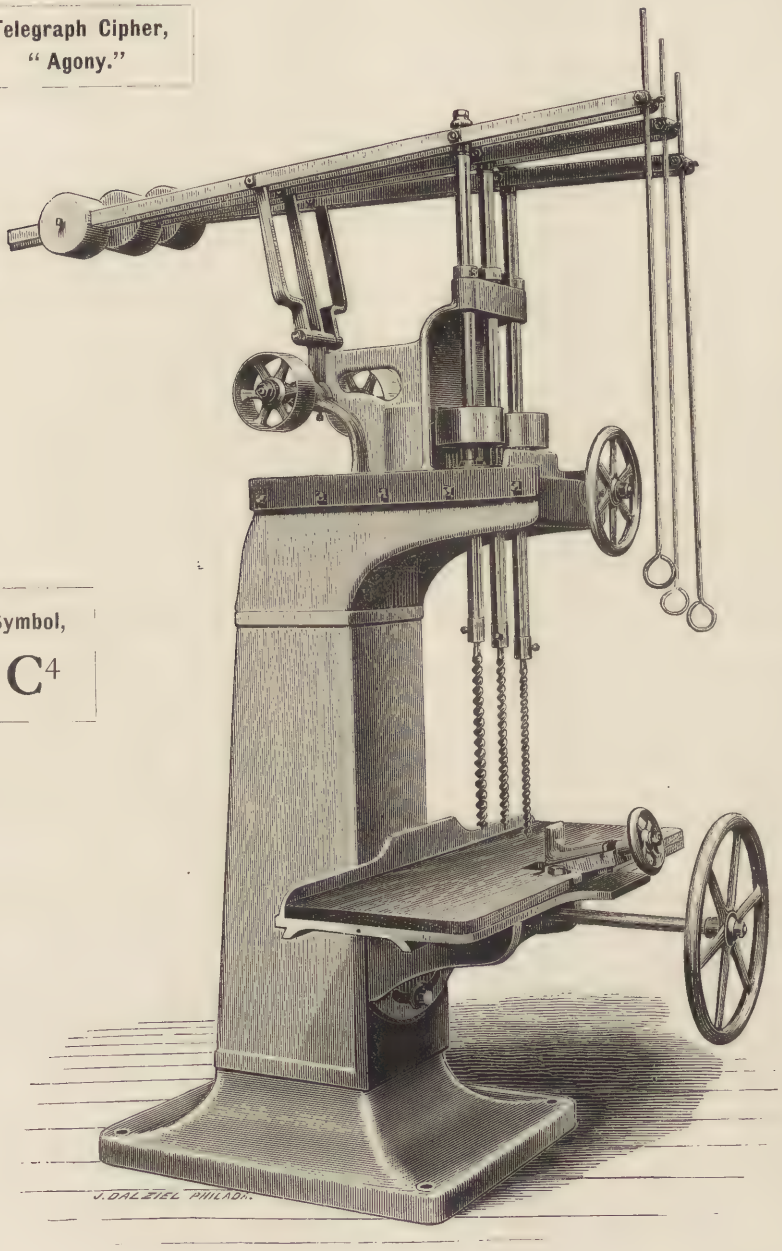
Details furnished.—One each $\frac{9}{16}$, $\frac{11}{16}$, $\frac{15}{16}$, $1\frac{1}{16}$ inch auger bits, 15 inches twist, countershaft, and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 14 inches diameter, 4 inches face, and should make 400 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher,
"Agony."



Symbol,
C^4

Three-Spindle Vertical Boring Machine.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Three-Spindle Vertical Boring Machine.

The machine shown in the engraving has three separate spindles, so that augers of different sizes can be operated at the same time, and all the holes in ordinary framing be bored at one handling and setting. These spindles are differentially geared, as to speed and power, to suit large or small augers, and can be driven without noise or the least injury to the machine at a speed of from 1500 to 2000 revolutions a minute.

Only one pair of tooth wheels are used, and these being spur wheels and engine cut, have none of the objections of bevel gearing.

The traverse movement of the spindles is 16 inches, and the vertical movement or stroke 18 inches.

Table.—The table traverses 24 inches, receives timber to 14 inches square and is pivoted so that diagonal holes can be bored.

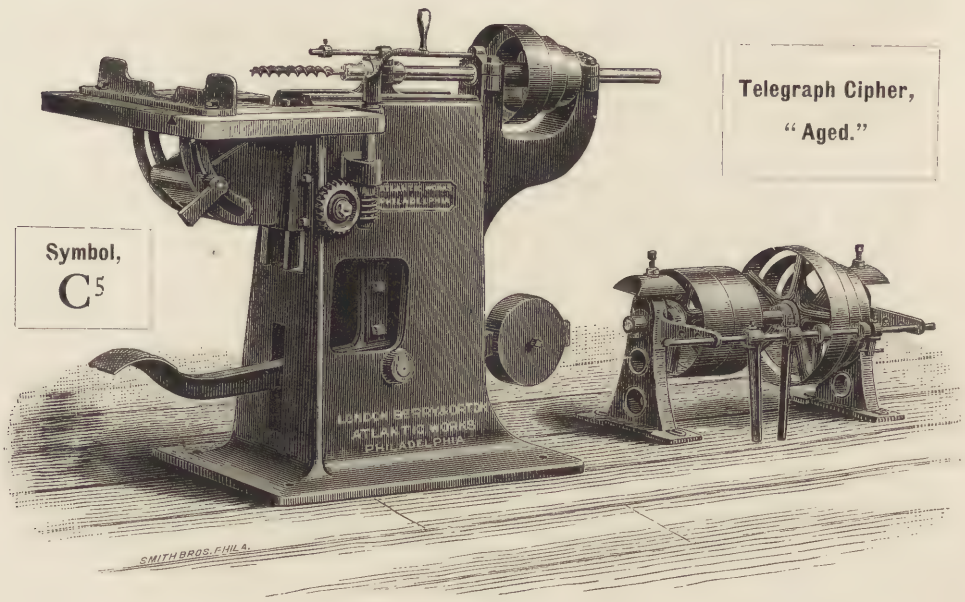
Details furnished.—Four augers 15 inches twist, countershaft, and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 12 inches diameter, 4 inches face, and should make 500 revolutions per minute.

Remarks.—This machine is free from bevel wheels, which have serious objections, as a means to drive boring spindles, among which may be mentioned the strain upon the shafts and bearings, noise, limit of speed and liability to wear and derangement.

London, Berry & Orton,

Atlantic Works, Philadelphia, Pa.



Horizontal Boring Machine.

The table adjusts vertically, and is pivoted for boring angular holes.

The spindle is not projected from its bearings in the common way, but has a support at the end which follows the stroke.

The fence or gauge can be placed either in front of or behind the pieces to be bored, as circumstances may require. There is a stop-rod shown at the top, which regulates the depth of holes.

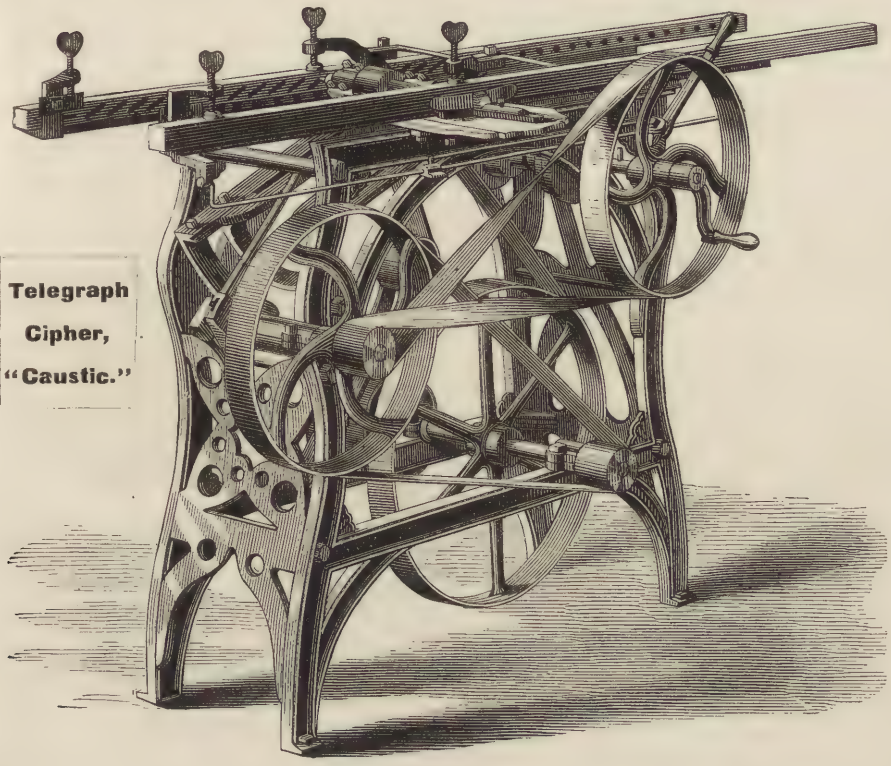
The machine will receive augers to 2 inches in diameter, and bore 12 inches deep, and is furnished with augers, one each ½ inch, ⅝ inch, ¾ inch, ⅞ inch and 1 inch by 12 inches twist, countershaft, and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 10 inches diameter, 4 inches face, and should make 600 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher, "Caustic."



Blind-Stile Mortising and Boring Machine.

The above cut is a representation of a machine for making the mortises for stationary shades, and boring holes for rolling shades in the stiles of window-blinds. It is entirely automatic in its operations, and either bores the round hole for the reception of the pivot of turning slats, or mortises the recesses for the reception of the ends of those slats designed to be permanently fixed at a certain angle. The latter are made on this machine, by means similar to those used in boring a simple round hole, the tool being a reciprocatory or traversing burr, or bit, which can be used on hard wood, knotty pine, and other obstinate descriptions of wood where ordinary machine chisels fail.

This machine will make mortises of any length, from a round hole up to 2½ inches, and of any width, depth and angle desired in a window-blind, leaving the mortise free from chips, ready for the slat, and is self-operating in all its parts. All the workman has to do is to put in the stiles and set the machine in motion, when it does its work, and having done it, stops. It does the work on both sides at once, at the rate of 60 mortises a minute. This bit, or burr, that does the work, is a very simple and cheap affair, not liable to be broken, and costs but 30 cents. This machine is wholly of iron and steel, thoroughly built, easily set up and put in operation, and not liable to get out of order.

One man can set out and mortise 150 pairs of blinds per day, with one machine, leaving the mortises free of chips, ready for the slats, and in five minutes it can be changed from mortising to boring, for rolling slats, and when thus changed is capable of boring 150 holes per minute, thus entirely obviating the necessity of having a separate machine for each kind of work, as this will do twice the amount of boring in a given time of other machines that bore but one stile at a time, while this does the work on two. This way of automatically making mortises is covered by four distinct patents, and parties infringing any of them will be prosecuted to the extent of the law.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

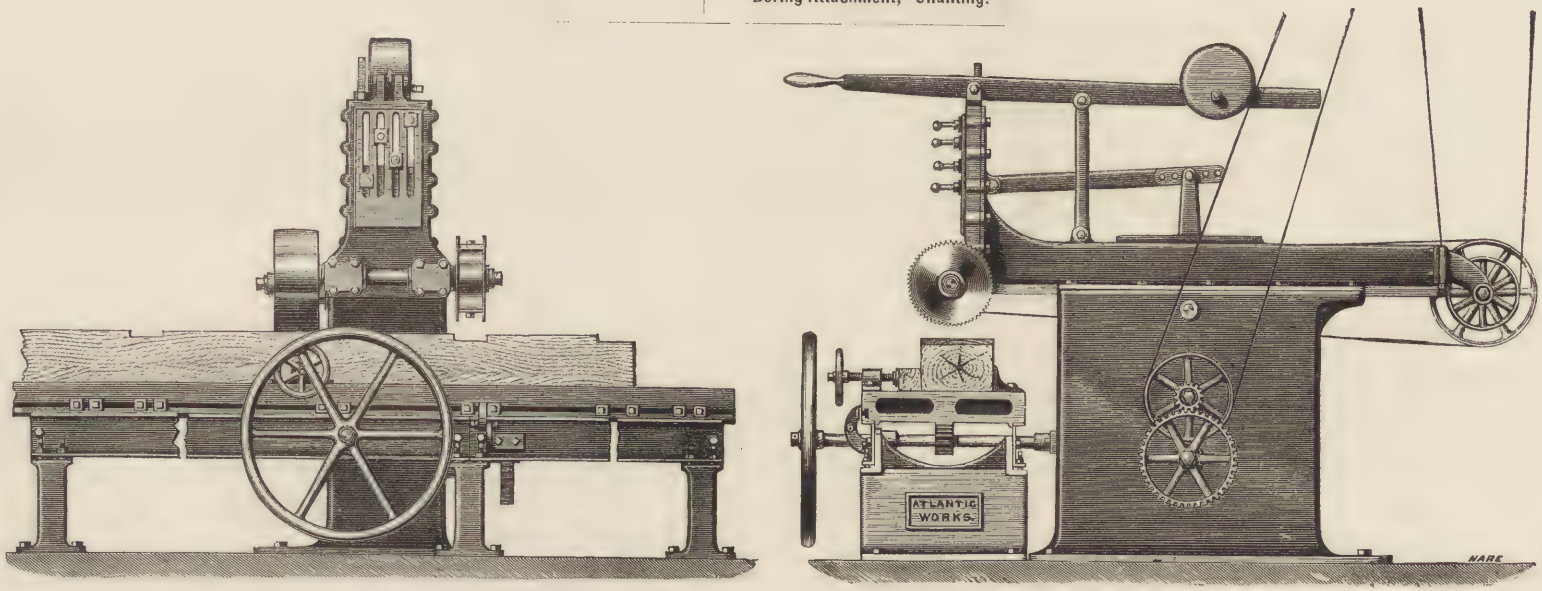
London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

Symbol, D^{I}

TELEGRAPH CIPHERS:

With 10-Foot Table, "Afresh."
" 34 " " "Agility."
" Boring Attachment, "Chanting."



Cross-Gaining and Grooving Machine.

Cross-Gaining and Grooving Machine,

For Heavy and Light Work.

The machine shown in two views is not made as represented in the cuts, as many and important changes have been made; it is intended for gaining or cutting notches in railroad-car framing, preparing hatch grating for ships, and other work of a similar kind.

Carriage.—Is now made of any length; fitted with bolsters to take on timber 24 inches wide, 16 inches thick; mounted on roll stands; has a power movement of 200 feet per minute, and will also move by hand for accurate setting.

Cutters.—The cutters, in addition to their rotary motion, have an automatic reciprocating movement across the timber. The forward and backward movement being equal, cutting can be done from either side, or both, as desired.

Duplicating Work.—The table is provided with twelve stops which are set to locate the position of gains lengthwise of the timber, and the depth to which the cutters act is determined by the movable stops on the front saddle in which the spindle is carried, so that when the machine is once set for a particular kind of work, no laying-out is required for duplication.

Heads.—The heads are fitted with spurs for cutting the shoulders, and flat knives by which the wood between is removed. One head will do for all work when the width of gain exceeds that of the cutters.

Small Pieces.—In preparing hatch gratings or other light work, a number of pieces can be done at one time, and with accuracy, so that they well fit together in erecting.

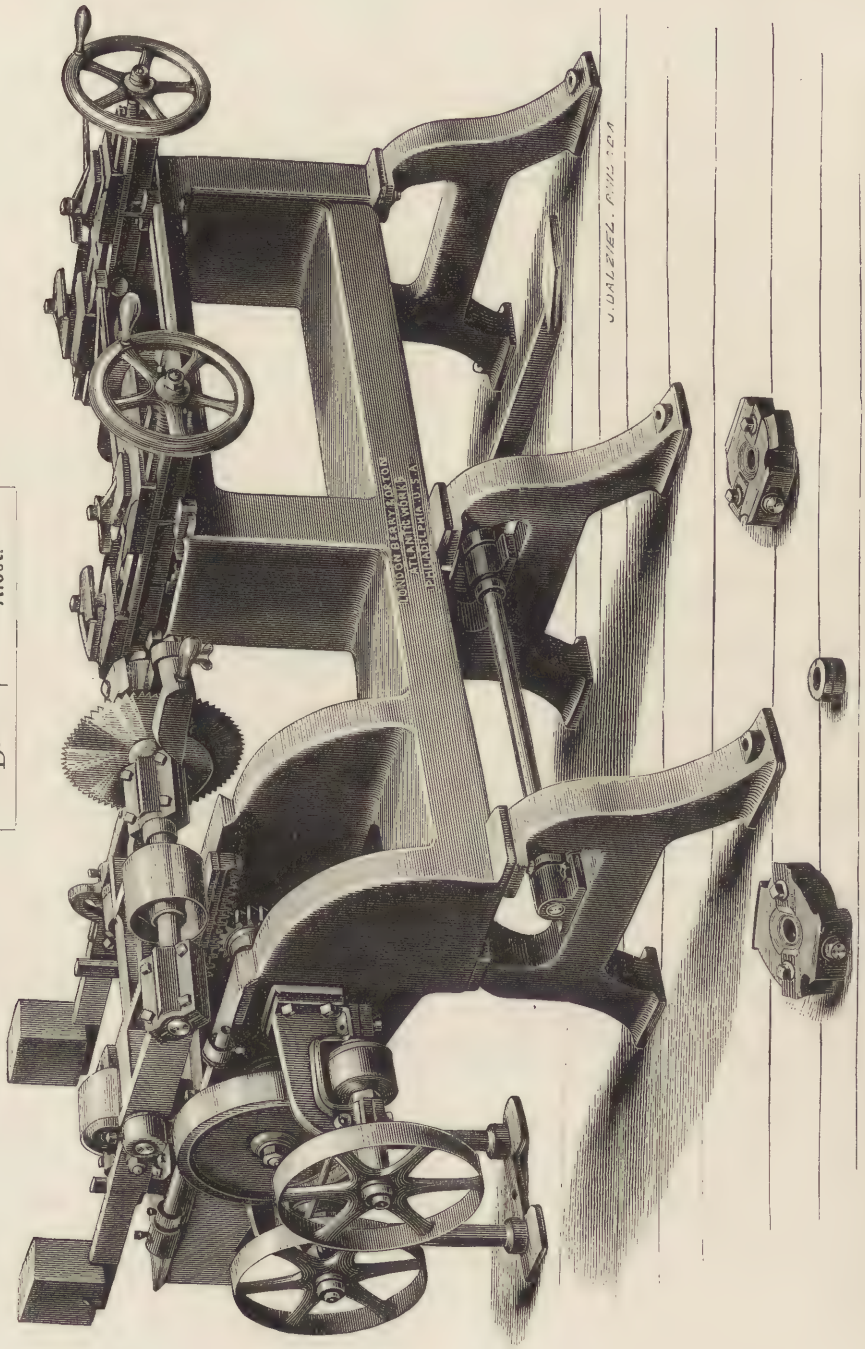
Boring.—When desired, the machine is provided with boring attachment, which has a horizontal movement of 16 inches and a vertical movement of 12 inches; also a radial adjustment by means of which angular holes can be bored.

Details furnished.—One cutter-head, countershaft, and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 16 inches diameter, 6 inches face, and should make 300 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



Symbol,	Telegraph Cipher,
D^3	"Afoot."

Gaining or Crozing Machine, for Tank Work.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Gaining or Crozing Machine,

For Tank and Other Work.

The machine shown on opposite page is of special design, used in Tank and Vat Factories for crozing and cutting off staves. It is wholly made of steel and iron, has a back and forward power feed entirely under the control of the operator.

Cutters.—Have two motions, one rotary and the other reciprocating across the stave; the forward and back stroke are uniform; hence cutting can be done from either side, leaving the corners perfect.

Table Clamps.—Have each right- and left-hand thread, actuated by the hand-wheel shown, so that the centre line of taper staves is always maintained at right angles to the cutter-head by the clamps.

Capacity.—It will take in any length, 12 inches wide, 3 inches thick, and cut a croze 3 inches wide, or less, to any desired depth, either in round or square work, without change or alteration; in other words, it is always ready to work any radius from 6 inches up, or flat work, as desired.

Remarks.—This will be found a most valuable machine for railroads, in constructing their water tanks and other work.

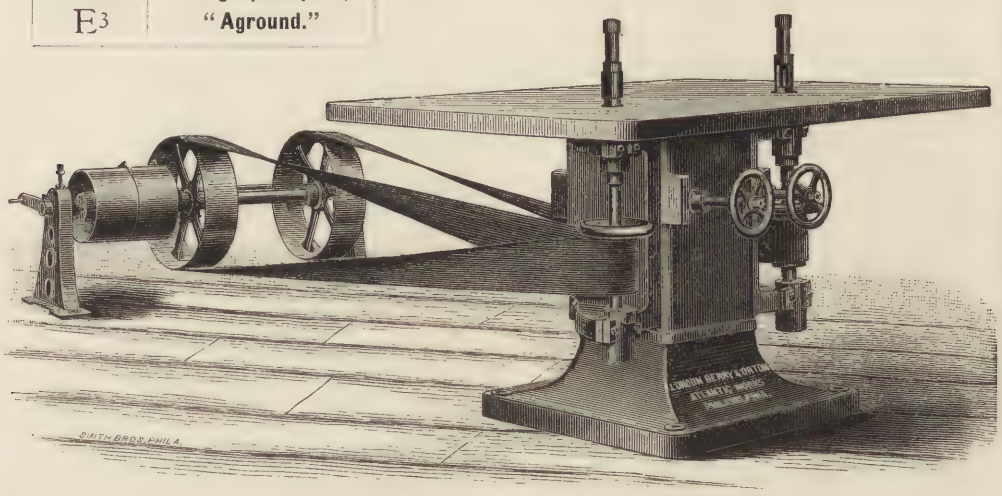
Details furnished.—One 12-inch saw, three gaining heads, countershaft, and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 12 inches diameter, 4 inches face, and should make 750 revolutions per minute.

London, Berry & Orton,

Atlantic Works, Philadelphia, Pa.

Symbol,	Telegraph Cipher,
E3	"Aground."



Irregular Moulding and Shaping Machine.

The engraving shows an improved shaping machine for moulding irregular forms.

The improvement consists in having the spindles run in frames which have a vertical adjustment by means of the hand-wheels shown in the cut, and the frames are mounted on the main post (which is cast in one piece), which is constructed so as to overcome any tendency to spring, keeping the spindles always in line with each other, and easily adjusted. There is no such thing as springing the frame, and causing the spindles to bind and heat.

Spindles.—Are made of the best cast-steel, $1\frac{7}{16}$ inches diameter, mounted in long, substantial bearings, and set 28 inches between centres.

The top is 4 by 5 feet, planed true, and all the parts are fitted with care.

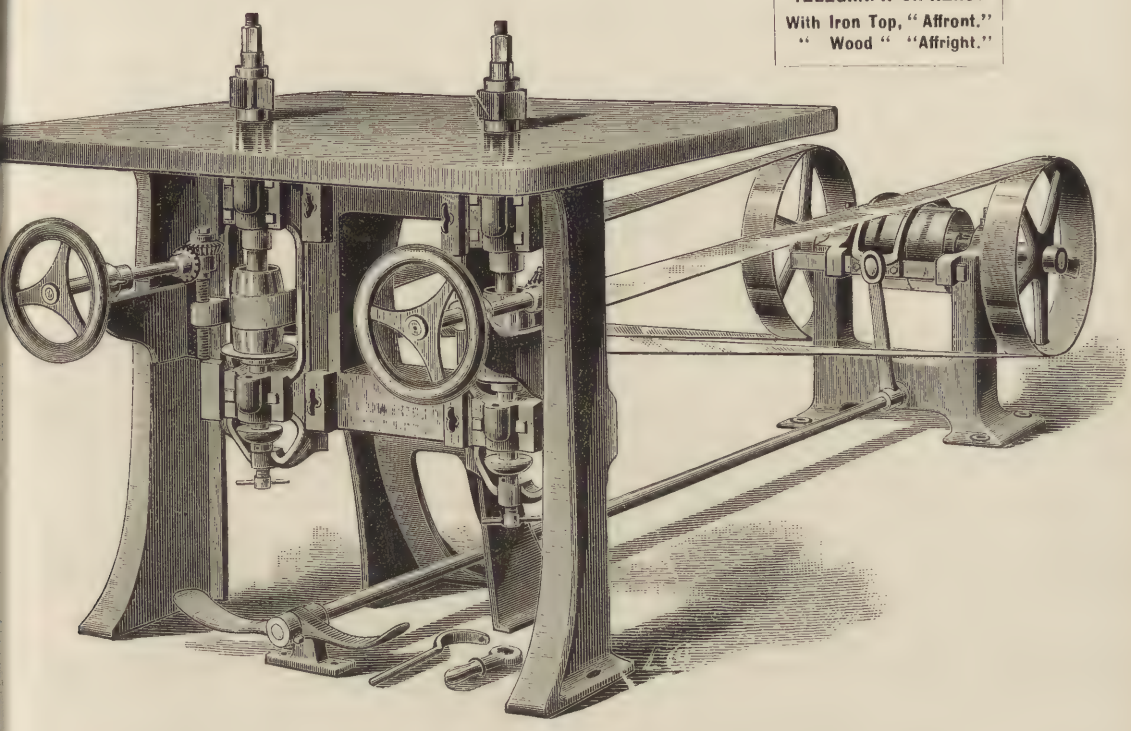
Details supplied.—Each spindle is provided with one pair of heads $2\frac{1}{2}$ inches in diameter, and cutters $2\frac{3}{8}$ inches wide, countershaft complete, and a full set of wrenches.

Speed.—Countershaft has tight and loose pulleys, 12 inches diameter, 5 inches face, and should make 900 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

TELEGRAPH CIPHERS:
With Iron Top, "Affront."
" Wood " "Affright."



No. 2 Improved Upright Shaping Machine.

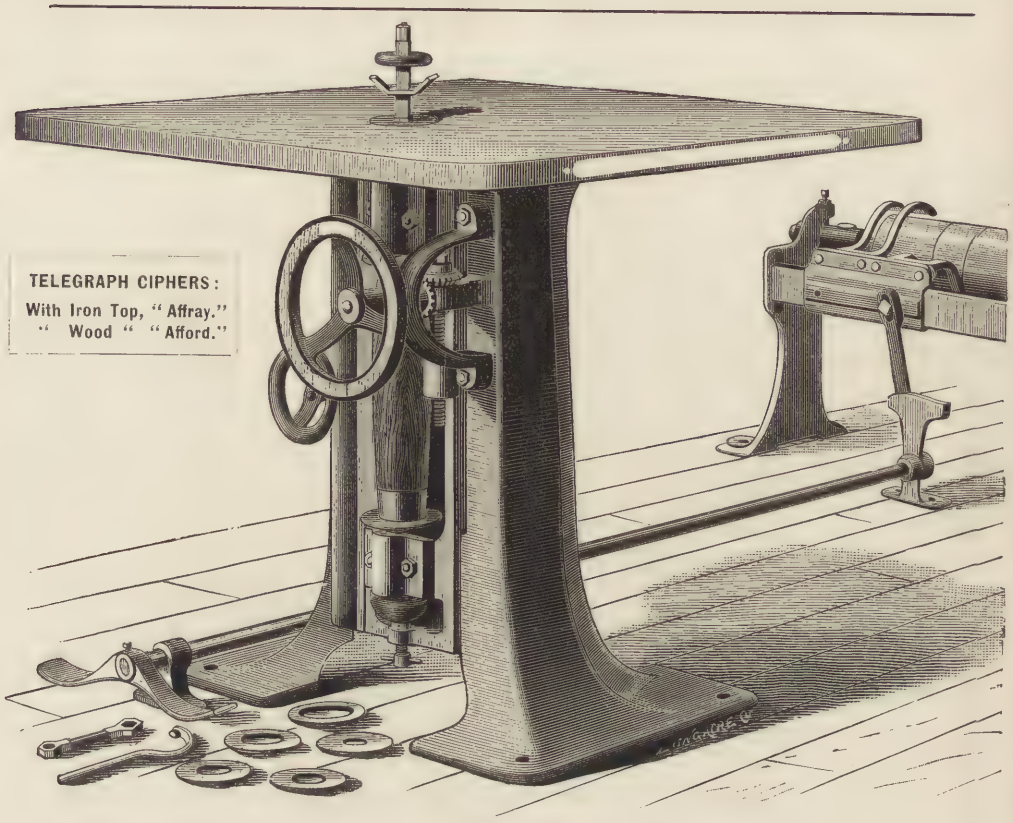
The cut represents our new design No. 2 Two-Spindle Shaping and Edge Moulding Machine. The frame is cast in one piece, consisting of the seats for the spindle frames, tubular girt for strength, and the "Tripod" design, giving but three points of contact on the floor, preventing any strain or twist of the frame or working parts. The machine is rigid, and of capacity for general work in every variety required. The spindles are made of the best cast-steel, 1⅜ inches diameter, ⅞ inch diameter above the table, and 21 inches between centres. The spindle frames have connected boxes and self-oiling steps, are adjusted for height by the hand-wheels, and held at any desired position. The top is of iron, planed to a true surface, and provided with adjustable rings to enlarge the openings when required to drop the collars or cutters below the surface of the table. Size of top, 42 x 46 inches. A wood top, made of glued-up, narrow, hard, wood strips, furnished, if preferred to iron.

One set of steel heads, 2¼ inches diameter, with four plain cutters and collars, are furnished with each machine. Extra heads of any diameter made to order. The countershaft is of new design; the hangers, boxes, and belt-shifting device all complete on one casting, with a reversible belt fork, to belt either from above or below, always in line and quickly placed in position, as shown in cut.

Tight and loose pulleys 8 x 4, and should make 850 revolutions. Weight of machine and countershaft, 1100 pounds.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



TELEGRAPH CIPHERS:
With Iron Top, "Affray."
" Wood " "Afford."

Single-Spindle Reversible Shaper.

The cut represents our new design improved upright Edge Moulding and Shaping Machine for working every variety of irregular mouldings and shapes. The table is made either of iron, or narrow strips of hard wood glued up, and has plates fitted for openings of five different diameters.

The spindle is made of the best cast-steel, fitted with stems screwed in to hold cutters with ⅜ and ⅝-inch diameter holes, and brass wheel guard on each stem to protect the operator.

The patent solid cutters work right and left to suit the grain of the wood, and without variation in the shape of the moulding.

All cutters are extra and made to order. Price-list of cutters and illustrated sheet of mouldings given on application. *All guide-collars are extra and made to order.*

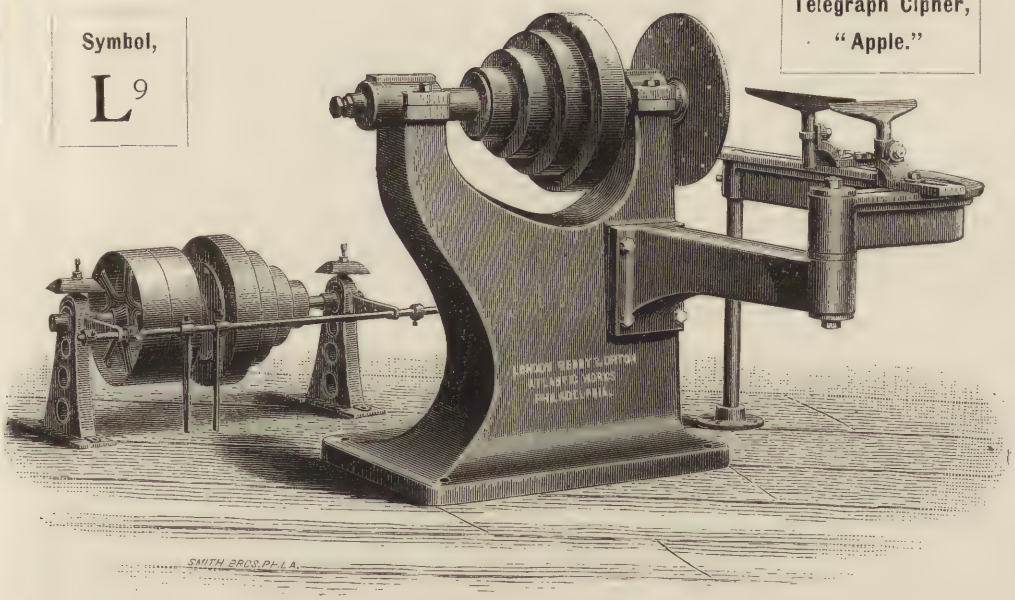
The countershaft is new in design with a positive and convenient arrangement attached for reversing the motion of the cutters. It has one fast pulley 6 x 3, and two loose pulleys 6 x 6 inches, the driving pulley 14 x 6 inches. Countershaft should make 1000 revolutions per minute. Weight, 900 pounds.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Symbol,
L^9

Telegraph Cipher,
"Apple."



Large Face Lathe,

For Pattern Turning.

These Lathes are intended for establishments where there are large circular patterns to prepare, such as for gear or water-wheels, pulleys, and so on.

Swing.—The Lathes swing to 6 feet diameter inside the rest when it is in the position shown in the cut, or to any larger diameter when the rest is swung back.

The rest is pivoted, so as to be instantly moved out of the way in mounting or removing pieces from the Lathe.

The Main Frame is cast in one piece, and the countershaft placed overhead.

The Spindle is 3½ inches diameter, the bearings of best Babbitt metal, and the whole machine fitted up in the best manner.

The Cone Pulleys are preferably made of wood, to avoid weight, but iron pulleys are furnished instead when preferred.

Each Lathe is provided with one face-plate and two rests, countershaft, and a full set of wrenches.

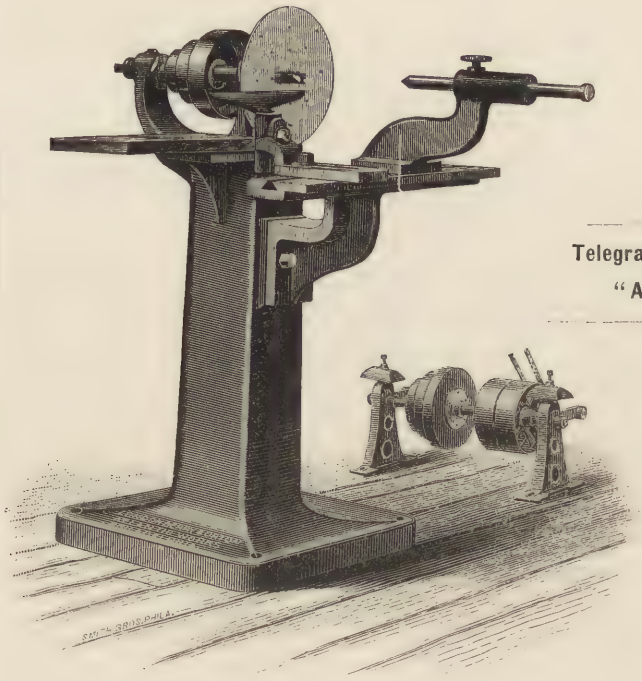
Speed.—Countershaft has tight and loose pulleys, 16 inches diameter, 3½ inches face, and should make 400 revolutions per minute.

London, Berry & Orton,

Atlantic Works, Philadelphia, Pa.

Symbol,

P4



Telegraph Cipher,
"Apply."

Small Face Lathe,

For Turning Bosses, Core Prints, Etc.

This very complete and useful machine takes the place of a Double-Head Lathe for a large share of the turning required in a pattern shop; it is much less expensive, occupies but little room, and is much more convenient and efficient for every kind of face work of 16 inches or less in diameter. In operating the Lathe, a workman stands in front instead of at the side of the work, which for face turning, especially inside work, is a matter of great convenience. These Lathes are strongly recommended in any case where there is considerable pattern turning to do; even if a Double-Head Lathe would perform all, there is much gained in time and convenience by having both, because a single lathe is generally in use when there are odd pieces to be turned.

Each Lathe is provided with an overhead shaft, rests, stands, and other details, as shown.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Symbols:

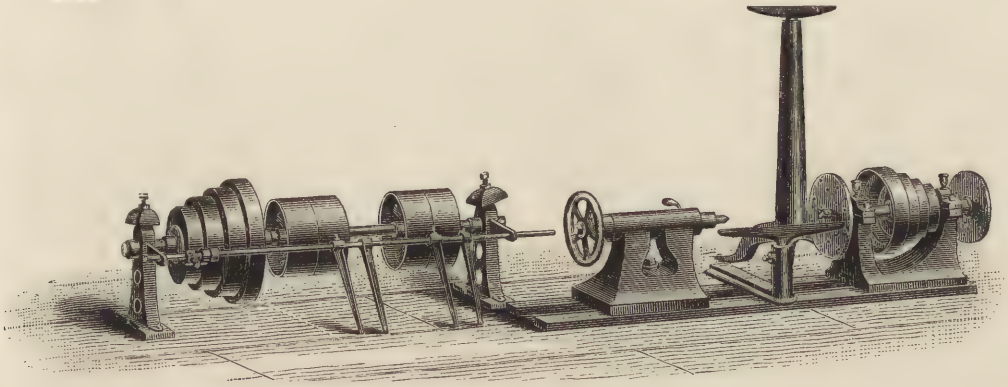
L^5

L^7

Telegraph Ciphers:

L5 Lathe, . . "Arising."

L7 " . . "Arming."



A Good Lathe for a Pattern Shop.

The engraving represents a 20- and 24-inch Wood Lathe, arranged with face plates on each end of the spindle.

The Countershaft is furnished with two pairs of tight and loose pulleys, to reverse the motion of cone head.

Each Lathe is furnished with floor rest, two sockets, two rests and countershaft.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

SYMBOLS:

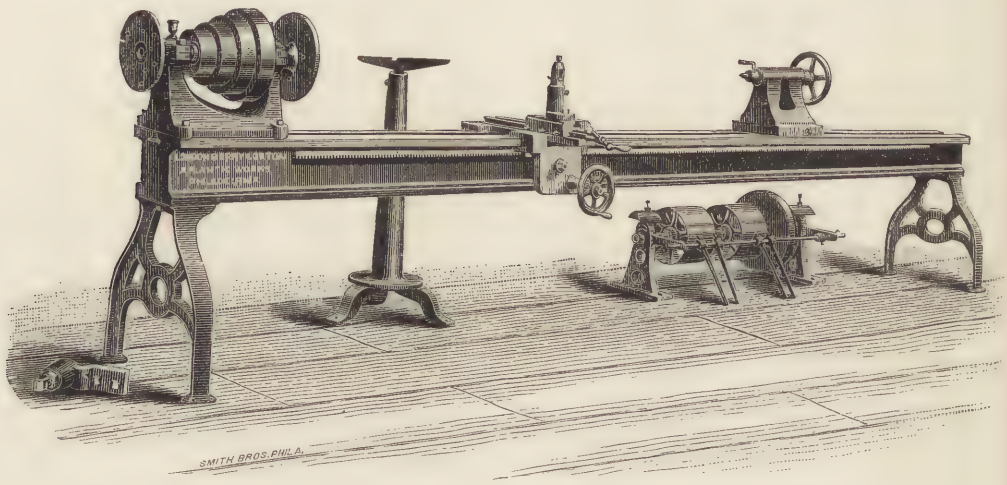
L6 20 in. Lathe.

L8 24 in. Lathe.

Telegraph Ciphers:

L6 Lathe, . "Arcade."

L8 " . "Ardent."



Pattern-Makers' Lathe,

On Iron Shears.

The engraving shows a 20- and 24-inch Wood Lathe, set on iron shears, 16 feet long.

The cone head spindle has face plates on both ends, so that larger work can be turned on the back face plate.

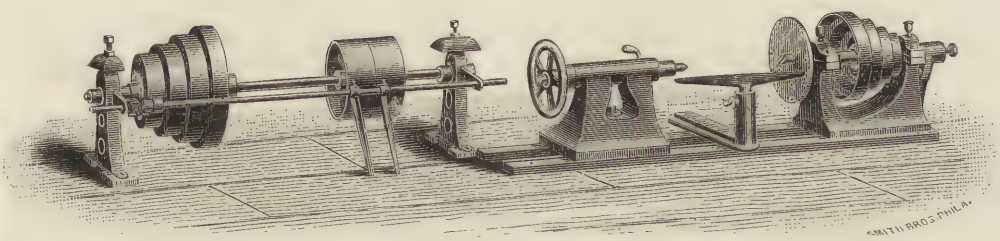
There is a floor stand for the back face plate, and the countershaft is provided with an extra pair of tight and loose pulleys to change the direction of motion for the back face plate.

The engraving shows a slide rest worked by hand, which is very convenient for long, straight, or taper work; it is also used as a socket or a hand rest.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

TELEGRAPH CIPHERS:		
Symbols:	L^1—12-inch Lathe, . .	"Apron."
	L^2—16- " " . .	"Arab."
	L^3—20- " " . .	"Arabian."
	L^4—24- " " . .	"Arbor."



Wood Lathes.

The above engraving represents a Lathe for turning wood of which we make four sizes, 12 inches, 16 inches, 20 inches, 24 inches swing. The wood frame on which the lathe is mounted is not included in the price, but can be furnished of any length if wanted. In most cases such frames are provided where the lathes are erected. The holding down and stand bolts can be fitted and sent along when the depth of the framing is noted in an order, or when the dimensions are left with us.

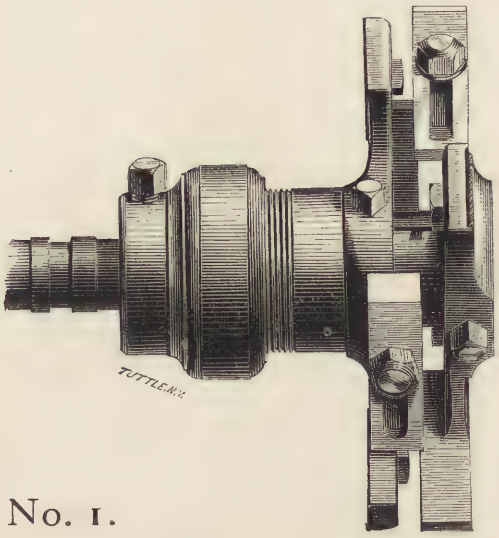
Cones.—Are made of iron, turned true both inside and out, are fitted to spindle with a taper, followed up with a nut. We use iron, it being lighter and always remains round, but will make them of wood if preferred, the price being the same in each case.

Details furnished.—With each Lathe one face plate, two rests, two sockets and countershafts, as shown in cut.

London, Berry & Orton,

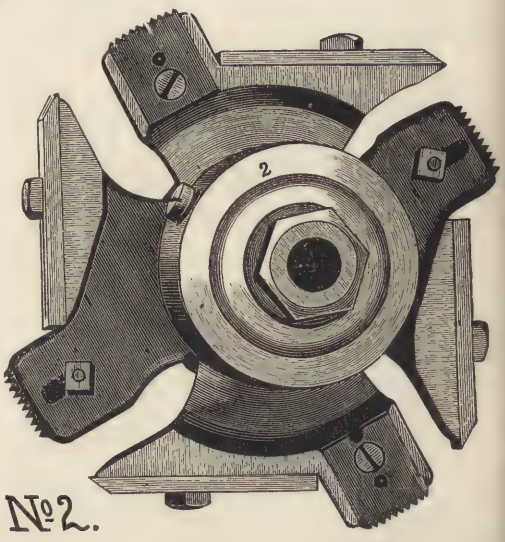
Atlantic Works, Philadelphia, Pa.

TELEGRAPH CIPHERS:
Nos. 1, 2 and 3, of cast-iron, "Armor."
" 1, 2 " 3, " gun metal, "Army."
No. 5, " " " "Arsenal."



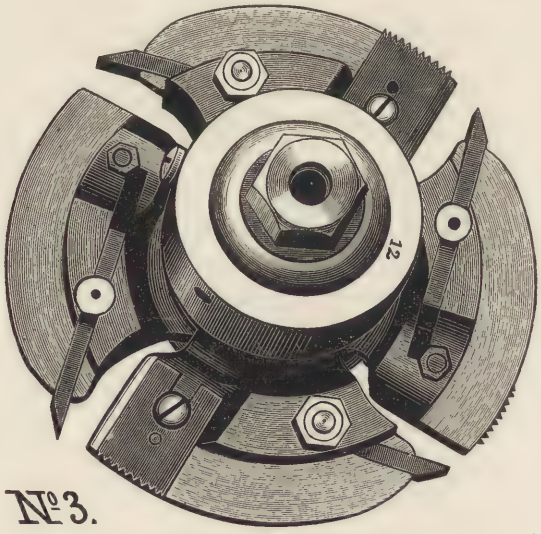
No. 1.

No. 1 is a Double Head, carrying knives from ¾ inch up to any width, secured to the head by bolts, but will not admit of any change in width of knives on the same head, and is adapted to an independent shaft, or can be put on a tenoning machine arbor.



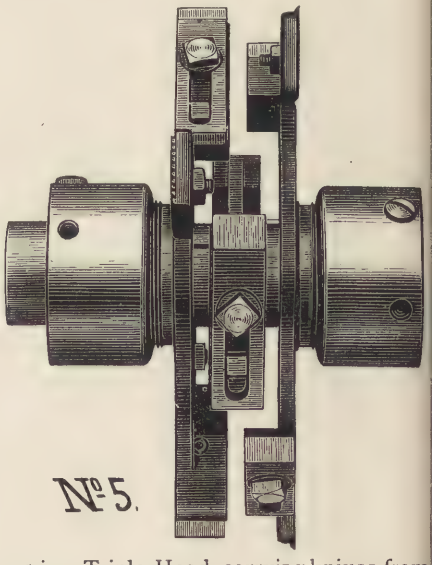
No. 2.

No. 2 is a Double Head, carrying knives from ¾ inch up to any width, secured to the head by bolts, but will not admit of any change in width of knife on the same head, and is adapted to a saw arbor.



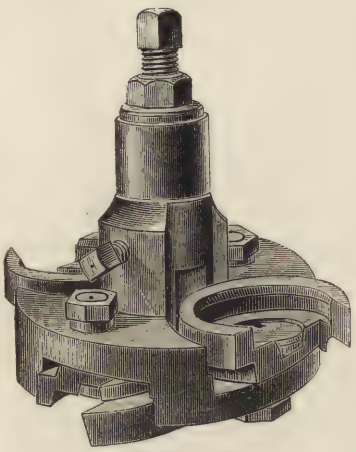
No. 3.

No. 3 is a Double Head, carrying knifes from 3-16 to ¾ inch, secured to head by clasp bolts, and will admit of changes of knives of any intervening widths between 3-16 and ¾ inch, and is adapted to a saw arbor.



No. 5.

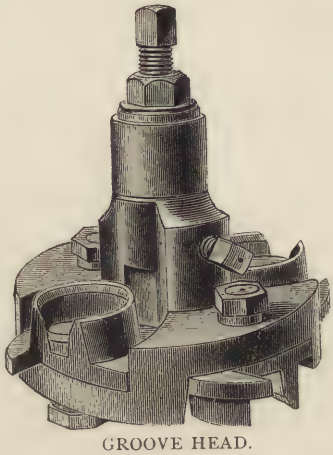
No. 5 is a Triple Head, carrying knives from 1 inch up to any width, secured to head by bolts, but will not admit of any change in width of knives on the same head, and is adapted to an independent shaft, or can be put on a tenoning machine arbor.



TONGUE HEAD.

TELEGRAPH CIPHERS:

With Bits, 2 1-4 inch circle, . "Artist."
" " 2 1-8 " " . "Ashamed."
Door Heads, ... "Ashore."
Sash Heads, ... "Aside."



GROOVE HEAD.

Shimer Patent Matcher Heads.

The Shimer Matcher Heads represent a combination of parts that give to the bits the best possible position to perform their work at once neatly and economically. The inexperienced workman can readily operate them, and others well practiced in the art of Matching fully appreciate their usefulness. To understand their make-up, we will first observe that the bits are arranged in two series, and consist of upper and lower bits, that divide the chip upon a central line of cut: first, one bit makes a cut, to be followed by the next bit belonging to the other series, therefore the entire cut is not made by one stroke, but by an alternate cut—first the one, then the other—to complete the full cut or outline of the shape to be produced.

This division of cut admits of a special adjustment of the bits, that give to them *the side clearance*, the *same as a saw tooth when set*, by securing them to their respective seats in a slanted position, so that no part of the bit comes in contact with the lumber but the cutting edge; *hence their wide-spread reputation for light and easy running.*

PRICES:

Matcher Heads, per set, complete with bits, 2¼-inch circle and upwards, ...	$38 00
Matcher Heads, per set, complete with bits, 2⅛-inch circle and under, ...	36 00
Door Head, ...	20 00
Sash Head, complete with cutters, ...	18 00

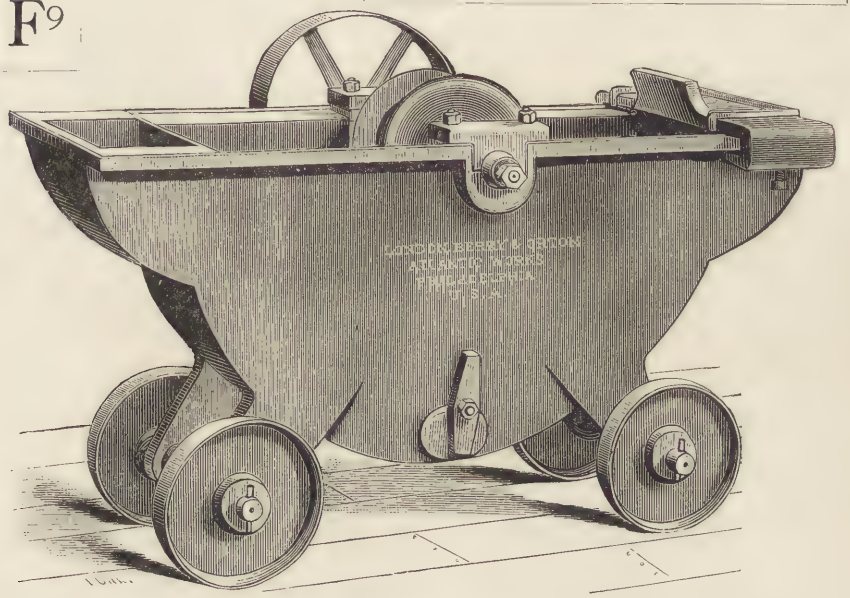
London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

Symbol,

F9

Telegraph Cipher, "Assail."



Machine for Turning and Truing Grindstones.

A good grindstone box made to take a stone 40 inches diameter by 6 inches face. Will stand on the floor without fastening, and can be run out of the shop to clean it out.

The truing of a grindstone is usually a disagreeable operation which is often neglected. The machine shown in Fig. 1 is a most effective device for turning grindstones and keeping them in order. The stone is not bruised off, but is cut by a chilled disk, driven by the motion of the stone itself. The machine can be attached to any grindstone frame, and should be placed as shown in Fig. 2—with the axis, A–B, of the cutter pointing towards the centre line of the stone. The cut should be started in from each edge of the stone, meeting in the middle of the face of the stone, and will thus prevent breaking down the edges of the stone. The stone is run in water while being cut, avoiding all dust; and the whole operation occupies from five to fifteen minutes. The chilled disks are very durable, and can be renewed at very little expense.

In order to demonstrate the superior character of this machine, we are willing to furnish it to any one on thirty days' trial. If its operation is not perfectly satisfactory after following our directions, it can be returned at our expense.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Symbol,	TELEGRAPH CIPHERS:
F7	Machine, "Assault."
	Cutters, . "Assay."

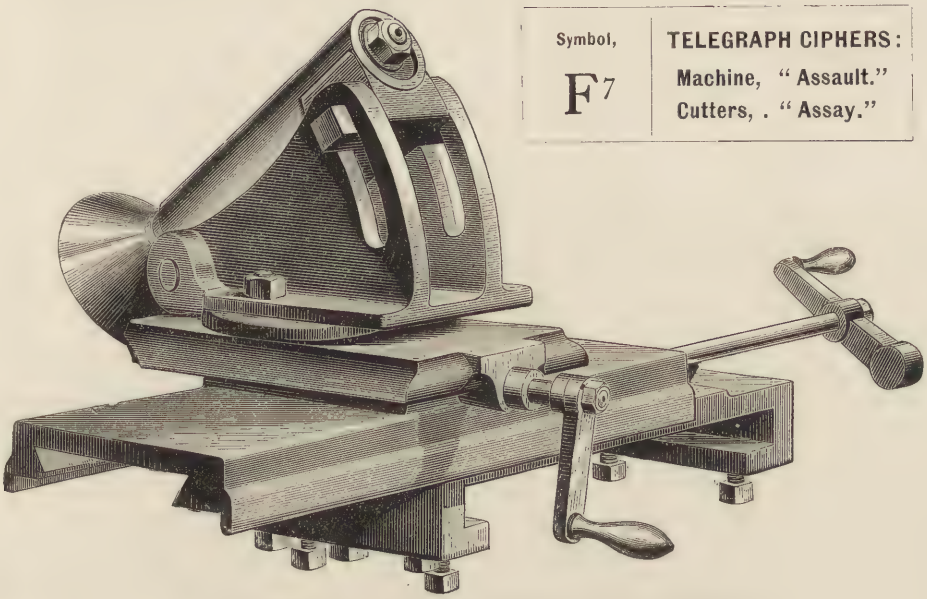


Fig. 1.—Perspective View of Grindstone Truing Machine.

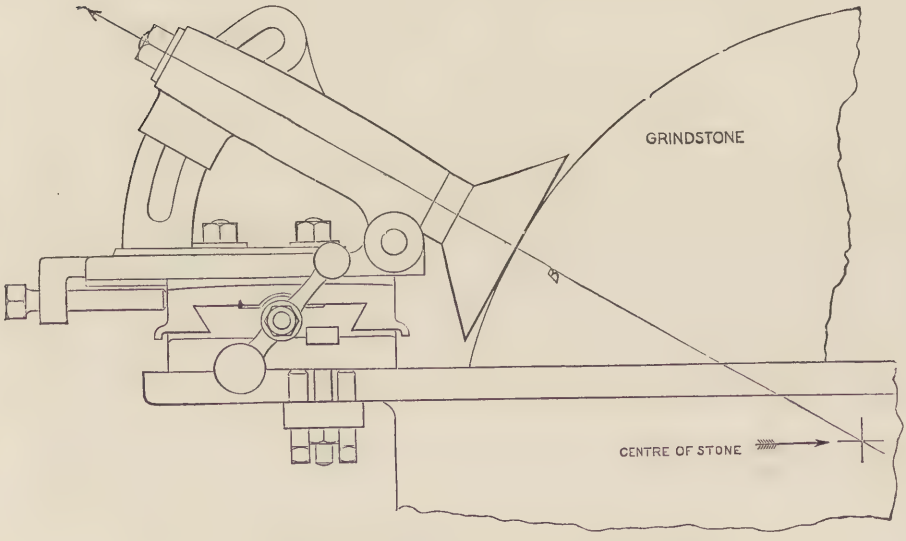


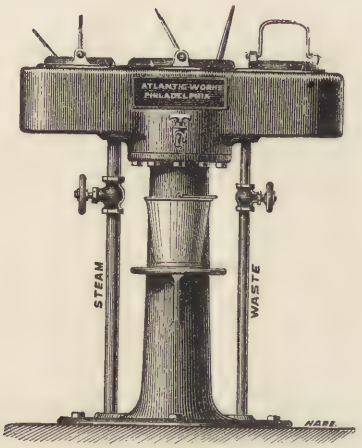
Fig. 2.—Showing the correct position of the Cutter.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Symbol,
P5

Telegraph Cipher, "Assent."



Steam Glue Heater,

for

Pattern Shops, Cabinet Shops, Book-Binders, Etc.

These heaters are constructed with double plate throughout, so that the pots do not come in contact with the steam or water, and hence are secure from leaking, and can be placed with safety on upper floors or in any room.

The steam chamber is cast in one piece, and there is but a single joint, and that where the flange is bolted on at the bottom, and this, being a plain flat one, is perfectly secure from leaking.

Steam and waste pipes, with screw valves, are fitted on each side, as shown, and on the front is a faucet for drawing off hot water.

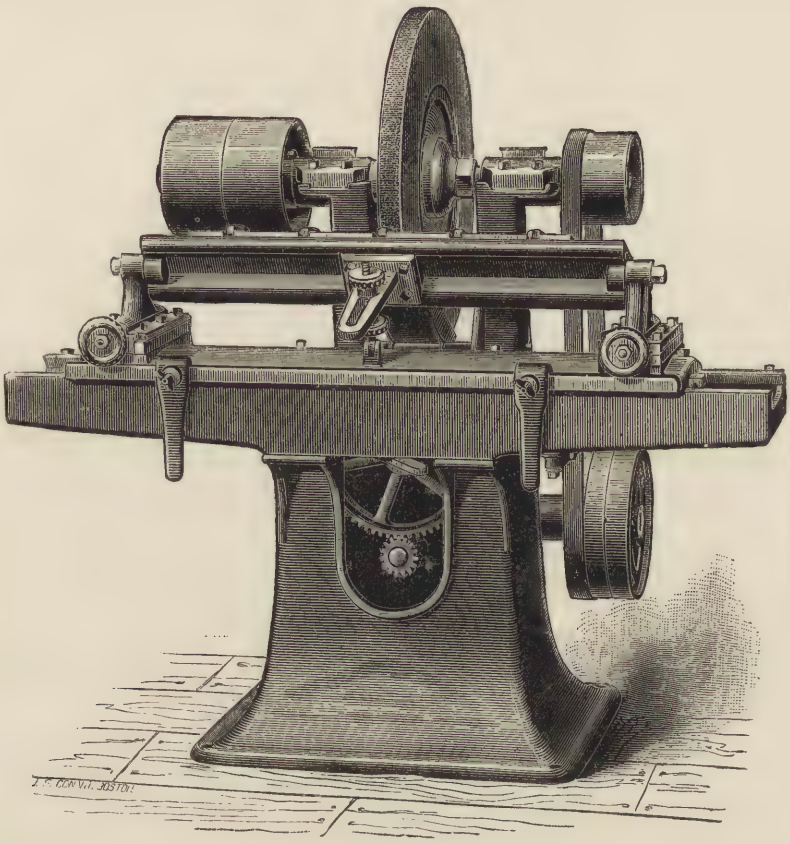
The pots are of iron, zinc-plated, and are turned at the flanges, so as to make a tight joint, and prevent the loss of heat.

The central pot, used for melting, holds one gallon, and those at the ends one-third gallon each. A zinc water-bucket, to hold one gallon, is also included.

Each heater is tested with steam, at a pressure of 60 lbs. to an inch, to detect leaks.

London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.



Telegraph Ciphers:
To grind 24 in. long, "Assign."
" " 30 " " "Assuage."
Hand-Grinder, . . "Astound."

Automatic Knife-Grinding Machine.

This Machine is strong and well built, care being taken to prevent vibration. The sliding bed is gibbed down to prevent the lifting action of the feed gear. The bed can be set up to the emery wheel to provide for the wear of the latter. The spindle is of steel, with large bearings; the working parts are protected from dirt and dust; knives may be ground at any angle, and from two inches in length upwards.

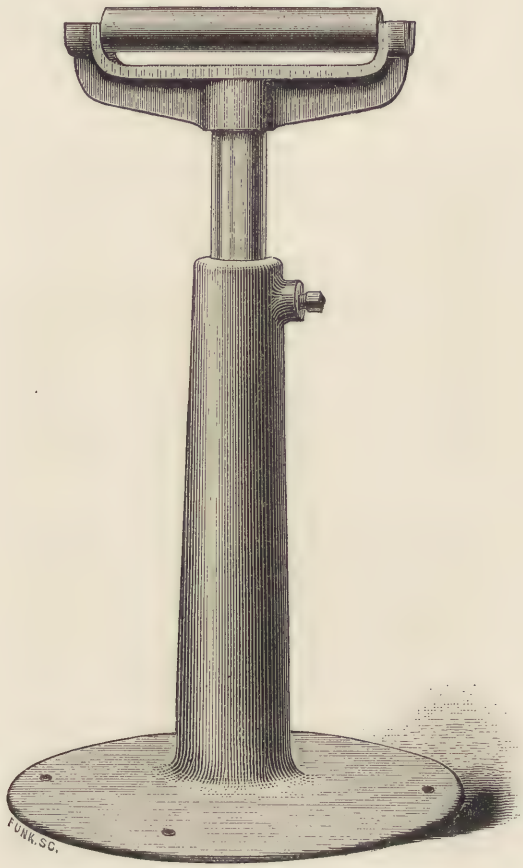
Two sizes are made, to grind 24 or 30 inches in length; emery wheel 22 inches in diameter; tight and loose pulleys, 8 inches diameter, 4 inches face, running at 225 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Symbol,
X^4

TELEGRAPH CIPHER,
"Astray."



Timber Roll.

A simple and durable device that can be set anywhere in the shop so that heavy timbers can be passed from one machine to another without carrying—saves time and labor.

Has a broad base, not easily tipped over, or it can be bolted to the floor. The roll is wrought iron, so also is the shank that holds the roll bracket.

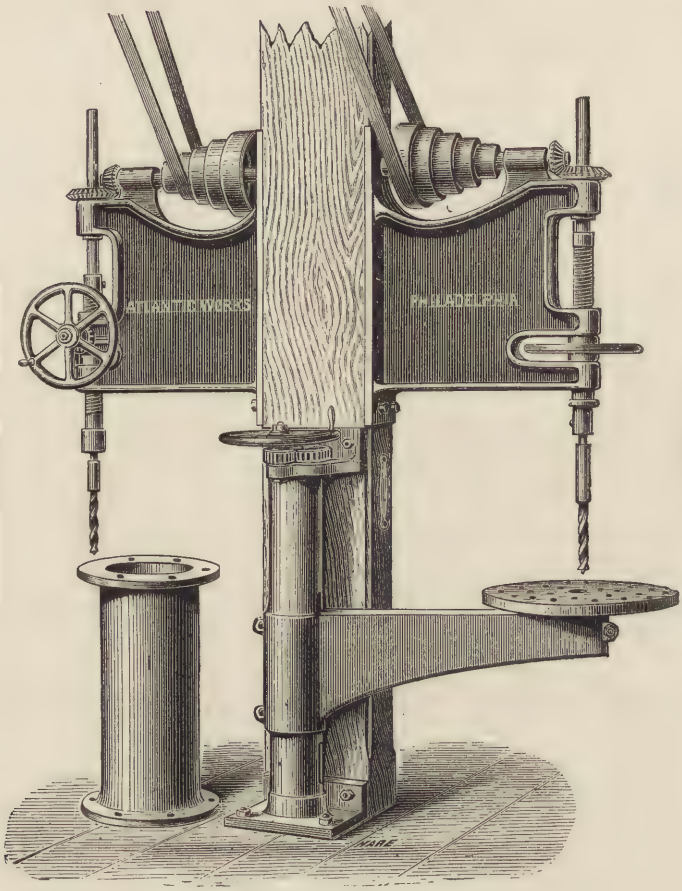
The roll can be raised or lowered at will.

Every shop should be well supplied with these ROLL STANDS.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Ciphers:
Drill Press with Table, "Atoning."
" " without " "Asunder."
Tab'e without Press, "Attain."



Symbol
F[1]

Metal Drilling Machine,

For Railway Car Shops.

The engraving above is taken from the machines as arranged in our works in Philadelphia.

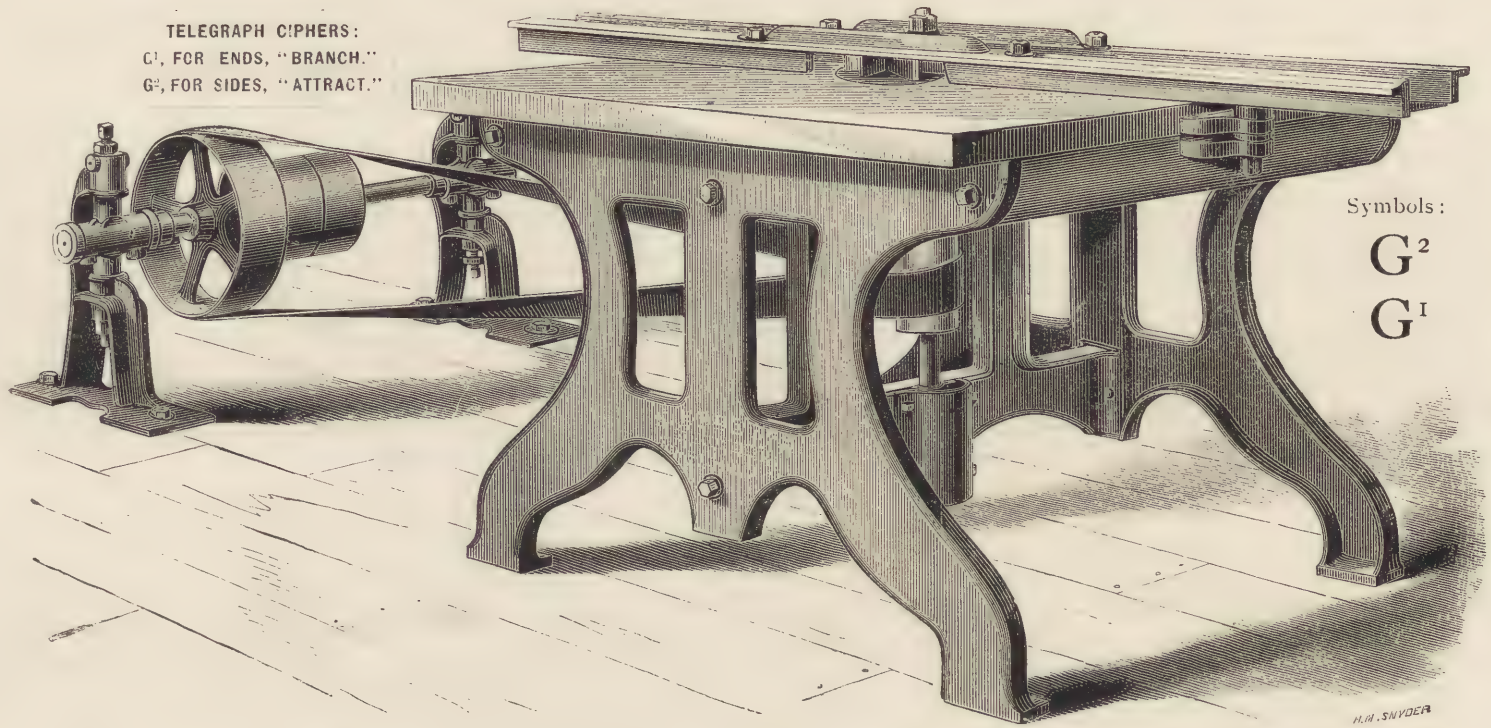
The machines drill to 30 inches clear of the wall or post to which they are fixed, and are exceedingly strong and durable. There are five changes of speed for drills of different sizes. The feeding wheels are arranged either horizontally or at the side, as may be preferred. The spindles are of steel, 2 inches in diameter, and have a feed movement of 10 inches. Overhead countershaft gearing is furnished with each machine.

When two machines are wanted, it is recommended that they be erected as shown in the engraving, and that the swing table be included. This table can be used with either machine, or may be swung entirely out of the way if not wanted. Arranged as shown above, the machines are very convenient for a fitting-shop, and have advantages for many kinds of work. They are in use in many of the leading shops.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Box-Jointing Machines.

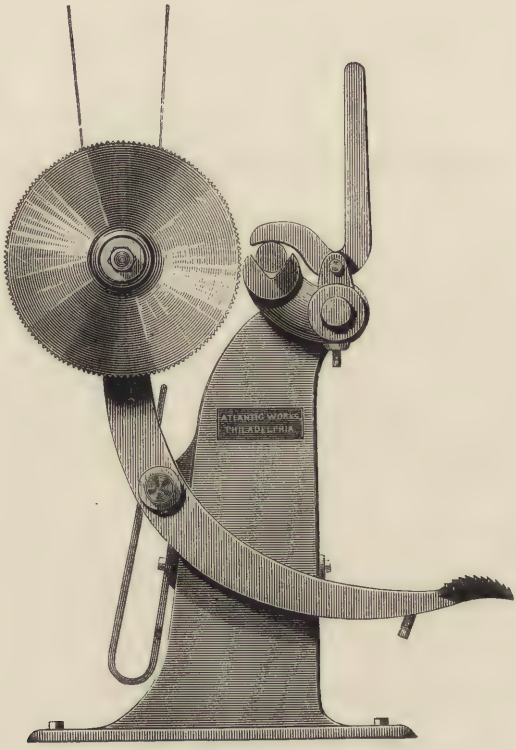


The engraving represents a machine for jointing off the bottom and top of boxes even with the sides after the box has been nailed. This machine is just the thing for small or light work, such as soap and candle boxes, oil cases, etc. One boy will joint from eight to ten thousand oil-case boxes in ten hours. We also construct a machine for jointing or cleaning off the ends of boxes after they are nailed, and will furnish drawings and specifications on application.

London, Berry & Orton, ATLANTIC WORKS, Philadelphia, Pa.

Telegraph Cipher, "Apollo."

Symbol, S[1]



Hot-Iron Cut-Off Saw.

There should be one of these in every Blacksmith's Shop in the United States.

Machines of the kind shown are now in common use in Europe, but are constructed with slides, screws, and other details, which are soon destroyed by scales and cinders. Arranged as in the drawing, the working parts are free from injury.

The saw spindle is mounted in a swing frame, operated by the treadle seen in front, the iron to be cut resting in the crotch brackets, as shown. There are three or more of these brackets placed on a turned shaft, so that they can be dropped down out of the way when not in use.

A gauge to regulate the length of pieces is fixed at the opposite side of the machine from the one shown in the drawing.

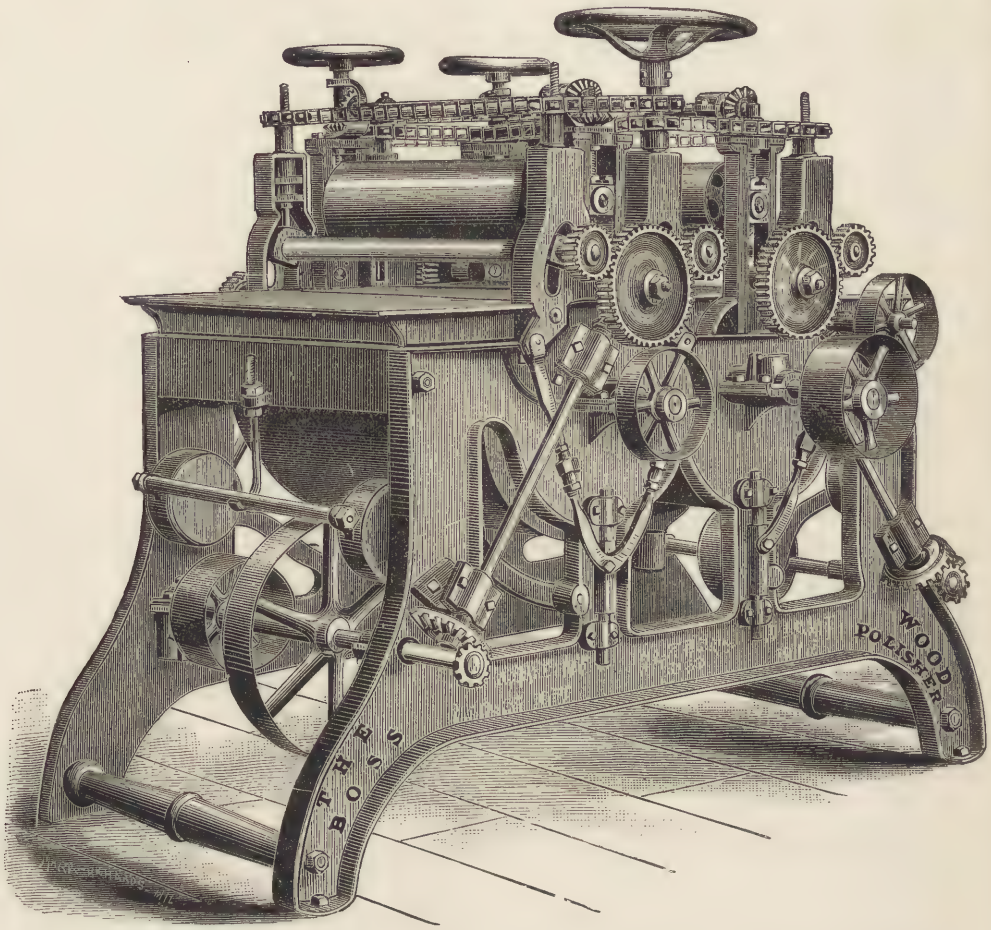
A protecting shield is placed over the saws to prevent sparks from striking an operator.

The machine, as shown, is arranged to cut off hot bars of iron or steel to 3 inches diameter, or 2½ inches square.

The belt is so arranged that, when not in use, it is slackened, so that the machines can run continually, and be constantly ready for use.

London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.



Double-Cylinder Sand-Papering Machine.

Telegraph Ciphers:

No. 1—Single Cylinder,	4½ x 24	inches,	"Cavern."	
No. 2— " "	4½ x 30	"	"Cavil."	
No. 3— " "	4½ x 36	"	"Cavity."	
No. 4— " "	4½ x 40	"	"Cedar."	
No. 5—Double "	4½ x 24	"	"Cellar."	
No. 6— " "	4½ x 30	"	"Cement."	
No. 7— " "	4½ x 36	"	"Censure."	
No. 8— " "	4½ x 40	"	"Census."	

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

The Boss Sand-Papering Machines.

Double Cylinder, Six-Roll Patent Brush Attachment.

The cut on opposite page illustrates the Double Cylinder Machine, as now being built by us from patterns new and entirely remodeled. A few of the important points of excellence claimed for this Machine, and which are secured by Letters Patent, are as follows: 1st.—The Brush Cylinder, over which the lumber passes after leaving the sand cylinders, which not only removes every atom of sand or loose fibre, but gives a glossy polish to the surface, a result obtained by no other machine in the market. 2d.—The arrangement of feed rollers, raised and lowered in perfect line by means of a pitch chain, all operated by one hand-wheel. 3d.—The adjustment of pressure rollers of sand cylinders, by means of which the cut of sand-paper can be made light or heavy at the will of the operator. 4th.—The Cylinders. 5th.—The Self-Adjusting Feed Rollers, which relieve all the friction of stock from the bed, and secure the most positive feed of any machine in the market. 6th.—The entire combination of parts, the result of years of careful experiments, which have happily been attended with great success, and gained for the Machine an acknowledged pre-eminence.

No well-appointed furniture factory, or factory in which work of a like character is being done, can now afford to be without one of these Machines. For large Furniture, Carriage, Wagon and Agricultural Implement Factories, the Double Machine will be preferred, being of greater capacity, although more suitable for the polishing of flat surfaces only.

SIZE.	WIDTH OF STOCK WORKED.	THICKNESS OF STOCK WORKED.	FEED PER HOUR.	T. & L. PULLEYS.	SHIPPING WEIGHT.
No. 5.—24 Inch	24 inches.	0 to 4½ inches.	960	7½ x 12	2,450 lbs.
No. 6.—30 Inch	30 inches.	0 to 4½ inches.	960	8½ x 12	2,900 lbs.
No. 7.—36 Inch	36 inches.	0 to 4½ inches.	960	8½ x 13	3,350 lbs.
No. 8.—40 Inch	40 inches.	0 to 4½ inches.	960	8½ x 13	3,500 lbs.

SINGLE CYLINDER, FOUR-ROLL PATENT BRUSH ATTACHMENT.

For curved surfaces, such as sides of certain patterns of burial cases, the proper machine will be the Single Cylinder, and those desiring a machine for coffin work should so state when ordering.

SIZE.	WIDTH OF STOCK WORKED.	THICKNESS OF STOCK WORKED.	FEED PER HOUR.	T. & L. PULLEYS.	SHIPPING WEIGHT.	FLOOR ROOM.
No. 1.—24 Inch . .	24 inches.	0 to 4½ inches.	960 feet.	5½ x 12	1,600 lbs.	6.8 x 4.6
No. 2.—30 Inch . .	30 inches.	0 to 4½ inches.	960 feet.	7½ x 12	1,700 lbs.	6.8 x 5
No. 3.—36 Inch . .	36 inches.	0 to 4½ inches.	960 feet.	7½ x 12	1,800 lbs.	6.8 x 5.6
No. 4.—40 Inch . .	40 inches.	0 to 4½ inches.	960 feet.	7½ x 12	1,900 lbs.	6.8 x 5.10

Machines are tested before leaving the shop, and have the cylinder or cylinders covered, ready for use, with the best sand-paper. Speed.—Countershaft, 465 revolutions per minute.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

Special Machines.

We would call your attention to the list published below of a few of the many Special Machines made by this firm and not noticed in this Catalogue. The drawings and patterns of such machines are always preserved, and the work can be duplicated at any time. We shall be pleased to quote prices.

Machines for Dock and Crib Work.
" " Splitting Plush Goods.
" " Cutting Loaf Sugar.
" " Cutting Cloth.
" " Cutting Candy.
" " Gaining for Coach-Work.
" " Turning Rings.
" " Boring any number of holes.
" " Duplicating Work.
" " Punching Metal (hand).
" " Cutting Band-Saw Teeth.
" " Automatic Swage for Band-Saws.
" " Log Turner (double).
" " Mortising Bedstead Work, etc.

London, Berry & Orton,

ATLANTIC WORKS, Philadelphia, Pa.

Remarks on Band Sawing.

Band Sawing Machines were invented about seventy-eight years ago (for full description of first Band Saw Machine see page 123 of this catalogue), but for various reasons did not come into use until twenty-five years later, since which time they have gradually worked to the front; so much so, that they are now in use in nearly all wood-working establishments.

There is no longer any problem respecting the value and practicability of Band Saws. A purchaser is relieved from all risk on these points, and has only to decide between different machines and makers.

They are employed in cutting both curved and straight lines, from the most delicate fretwork to the huge logs of the Pacific coast, and with much greater speed and less waste than possible with other kinds of saws.

They are divided into hand-feeding and power-feeding machines: the timber being in one case presented and guided by hand, and in the other forced along by power, as in the case of sawing lumber from logs.

Mills for sawing lumber from logs are built with wheels from 72 to 96 inches in diameter, carrying saws from 6 to 8 inches wide, and from 38 to 50 feet in length, and are fully described in this catalogue. Hand-feeding and resawing machines are constructed with wheels varying from 36 to 72 inches in diameter, and are the subject of our Band Saw Machine catalogue, which we shall be pleased to furnish parties interested, on application.

Band Saw Machines, however they may seem alike in appearance, are not so in fact, there being a wide difference in their convenience, speed of working, and especially in respect to breaking saw blades.

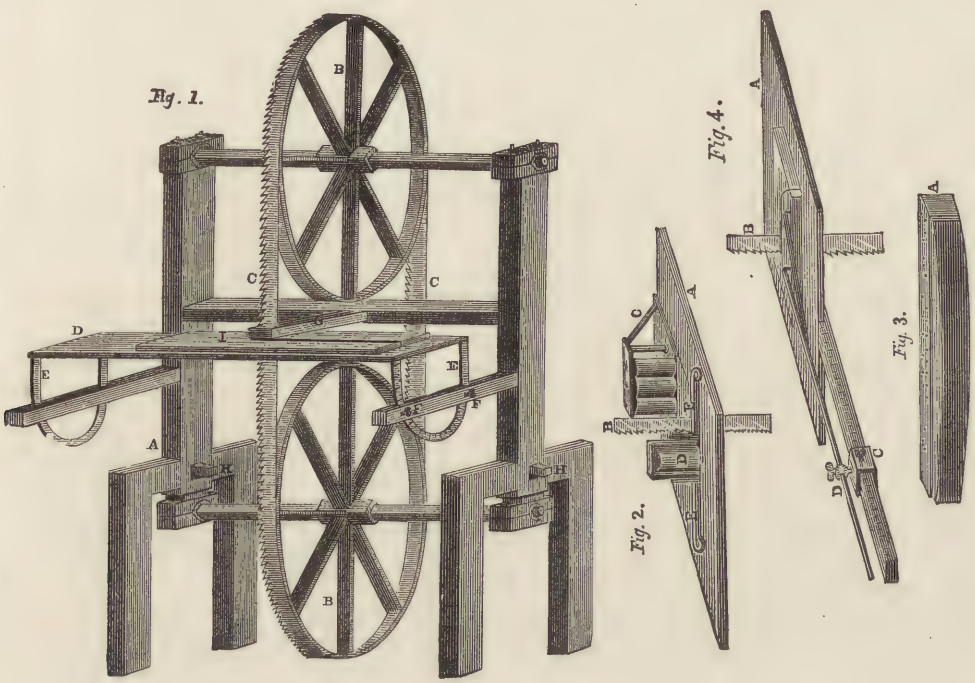
If a machine is fitted with heavy top wheel, bad saw guides, "retarders" or improper tension apparatus, the quantity of saws broken and destroyed will soon amount to as much as the first cost of a machine.

As there are many details that can be omitted or supplied with Band Sawing Machines, greatly affecting their value and cost of construction, it will be found to the advantage of purchasers to advise with reliable and experienced makers of first-class machines before placing their orders.

London, Berry & Orton, of the Atlantic Works, Philadelphia, have over one hundred Band Saw Log Mills in operation, which is probably more than the combined number of all other manufacturers; and as their reputation for first-class work stands high, we would advise consulting them in all matters pertaining to Band Saws or Band Saw Mill Machinery.

It was long ago settled, that the only practicable way to save timber from waste in the sawdust heap is to use thinner saws. To do this, the Band Saw as an instrument for cutting lumber has been experimented with and talked about for years. And though its development was slow, it came; and when the owners of timber began to protest strongly against the waste of their material as it was ground up into worthless dust, the sight of a Band Saw cutting inch lumber, and turning out twenty per cent. more from the same quantity of logs than the circular on the other side of the mill, could not be overlooked. A saving of one-fifth of the lumber in a lot of choice logs, worth from $10 to $15 per thousand, would not take long to pay all the cost of new machinery. And when the fact is added that the lumber is better and smoother, and can be dressed with less waste, no one can doubt that the Band Mill is the mill of the future.

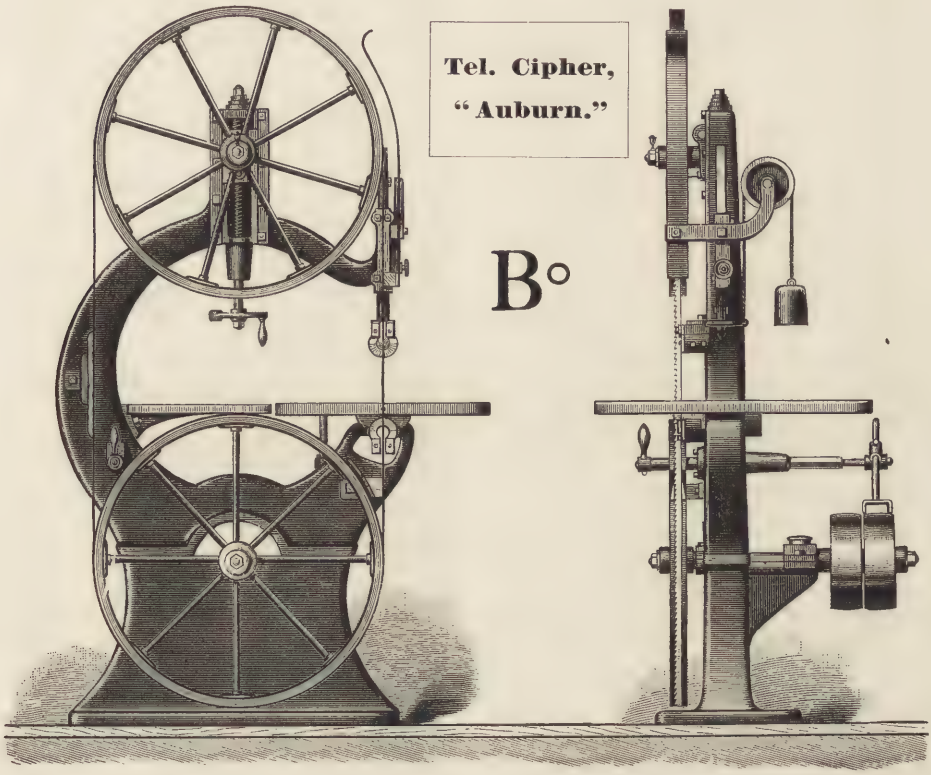
Late trials of the Band Saw serve to show that it is beginning to crowd some of the liveliest of the circular mills as to quantity cut. A London, Berry & Orton Band Saw of the pattern of two years ago, and without the latest improvements, recently cut over 52,000 feet of lumber in a day of ten hours, about *ninety per cent.* of the quantity being *inch* lumber. Considering the large per cent. of INCH lumber, this is probably the best cut on record. This is a good day's run for any mill, and proves the Band Saw the best means now known of turning logs into lumber.



History of

The First Band Saw Machine.

As a matter of some interest to those concerned in the use of sawing machinery, the engraving above has been prepared from the original drawings now on file in the British Patent Office, illustrating a Band Saw Machine made and patented by William Newberry, of London, England, in the year 1808, *seventy-nine years ago.* This was, no doubt, the first organized and operative Machine of the kind ever made, and, considering the circumstances of the time, was an invention of no little importance. The Machine is described as having a frame of iron. The table, it may be noticed, is pivoted, and at figures 2 and 3 are shown a radius guide and feeding rollers.



No. 0 PATENT BAND SAW MACHINE.

The Frame is cast in one piece, having the base bolted on.

The Wheels are 36 inches in diameter, and made of wrought iron, with wood rim covered with gum cloth.

The Position of the saw on the wheels can be controlled by the operator without leaving his place or stopping the machine. This is a very important point, as the dust collecting on the wheels frequently causes the saw to change its path, crowding it hard against the guides, breaking the saw and otherwise injuring the blade.

The Guide Stem and guide are counter-balanced.

The Table is pivoted to cut bevel lines.

The Machine receives lumber 15 inches thick, and saws to ¾ inch in width. It is furnished with one saw, scarfing-frame and soldering tongs.

Before giving size of tight and loose pulleys and the speed required, we should know the kind of work the machine is intended for. Some work will bear much more speed.

Diameter. *Face.* *Speed.*

Size of tight and loose pulleys,

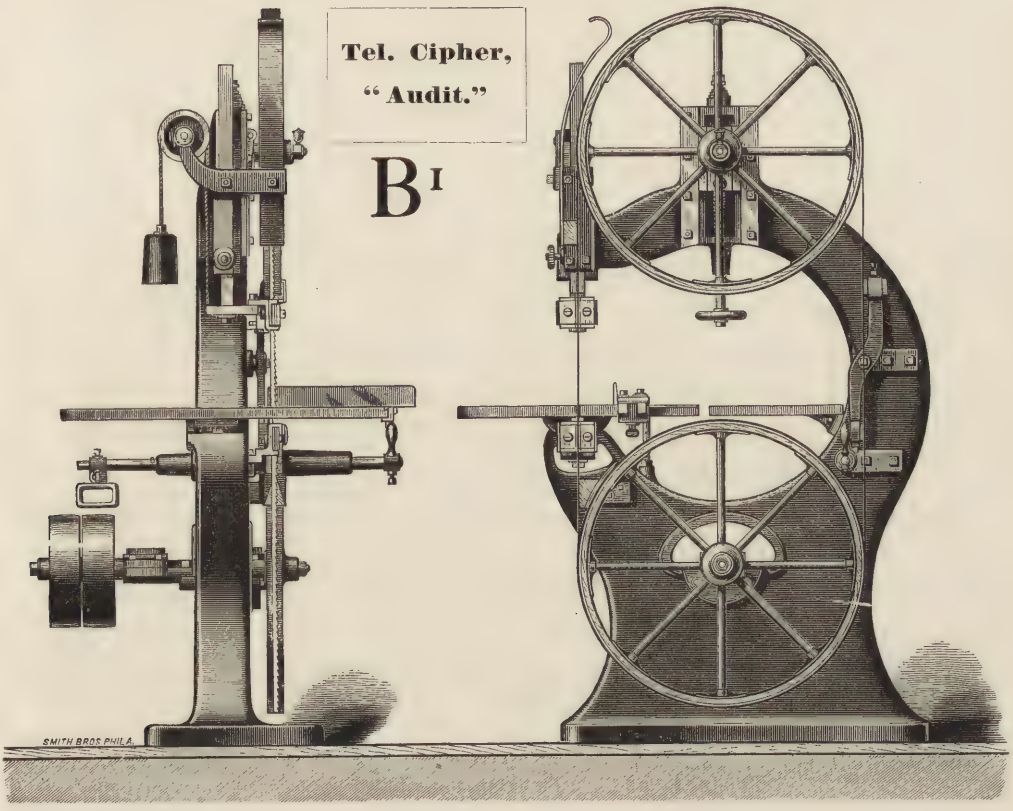
Price, F. O. B. Philadelphia,

LONDON, BERRY & ORTON,

22d Street, above Arch,

PHILADELPHIA, PA., U. S. A.

Every machine is belted, adjusted and put in complete working order before it leaves the Works.



No. 1 PATENT BAND SAW MACHINE.

The Frame is cast whole.

The Wheels are 36 inches in diameter, and made of wrought iron, with wood rim covered with gum cloth.

The Position of the saw on the wheels can be controlled by the operator without leaving his place or stopping the machine. This is a very important point, as the dust collecting on the wheels frequently causes the saw to change its path, crowding it hard against the guides, breaking the saw and otherwise injuring the blade.

Guide Stem and guide are counter-balanced.

The Table is pivoted to cut bevel lines.

Receives Lumber to 13 inches in thickness, and saw blades to 1 inch in width. It is furnished with one saw, scarfing frame and soldering tongs.

Before giving size of tight and loose pulleys and the speed required, we should know the kind of work the machine is intended for. Some work will bear much more speed.

	Diameter.	*Face.*	*Speed.*
Size of tight and loose pulleys,			

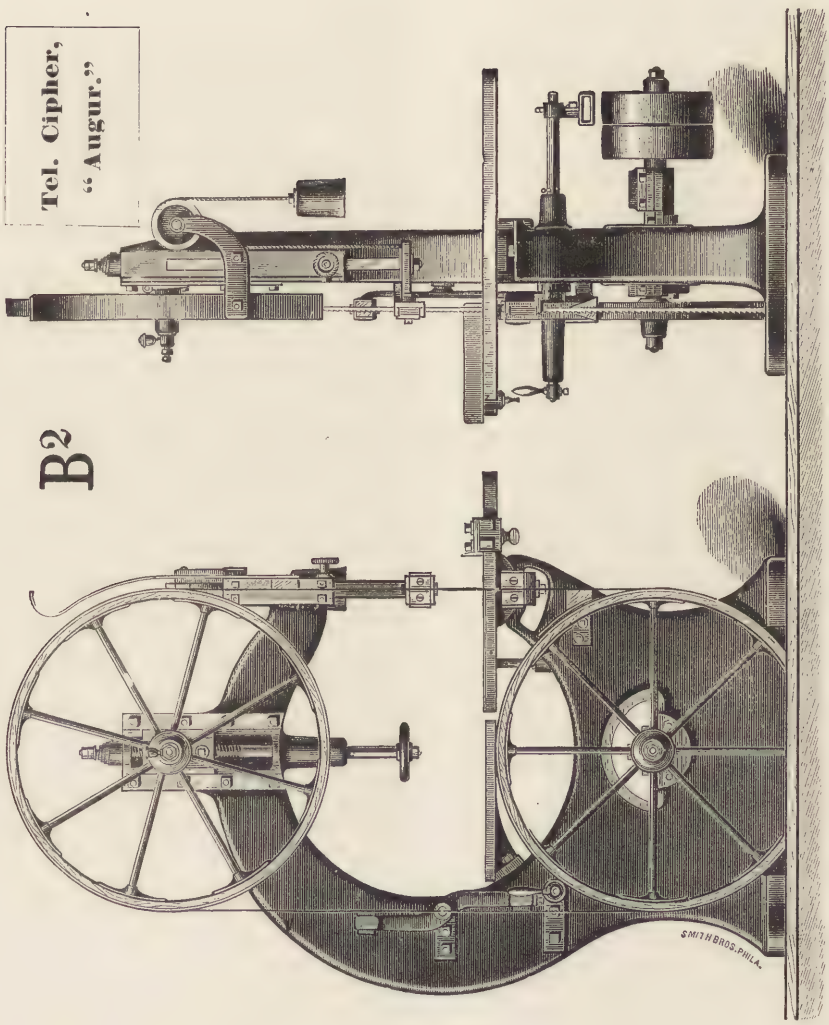
Price, F. O. B., Philadelphia.

LONDON, BERRY & ORTON,

22d Street, above Arch,

PHILADELPHIA, PA., U. S. A.

Every machine is belted, adjusted and put in complete working order before it leaves the Works.



No. 2 PATENT BAND SAW.

SPECIFICATION OF THE

No. 2 Patent Band Saw.

The Frame is cast with a rectangular cored section, and will stand a strain of two and one-half (2½) tons on wheel axis, without affecting the guide.

The Wheels are **40 inches in diameter,** and are made of wrought iron, covered with bent-wood rim; the saw running on gum cloth.

The Shafts are steel, bearings of Babbitt metal.

The Pulleys and wheels are held by planed steel keys and nuts, no set-screws are used.

The Table is pivoted for bevel sawing, and has an adjustable gauge for parallel lines.

The Upper Guide and stem are counter-weighted, no danger of falling.

The Top Wheel can be adjusted instantly and accurately to regulate the path of the saw while the machine is in motion.

The position of the saw on the wheels can be controlled by the operator without leaving his place or stopping the machine. This is a very important point, as the dust collecting on the wheels frequently causes the saw to change its path, crowding it hard against the guides, breaking the saw and otherwise injuring the blade.

The Tension of the Blades is provided for by a very sensitive spring.

The Cylindrical Back Guides, provided above and below the table, present the best surface for a saw to run against, as it is impossible to *upset* the back of a *saw* with these guides.

The Machine receives lumber *15 inches thick*, saws to 1¼ inches in width and 20 feet 6 inches long.

Every Machine is fitted with *belt-shifter, one saw, soldering tongs and scarfing frame.*

Diameter. *Face.* *Speed.*

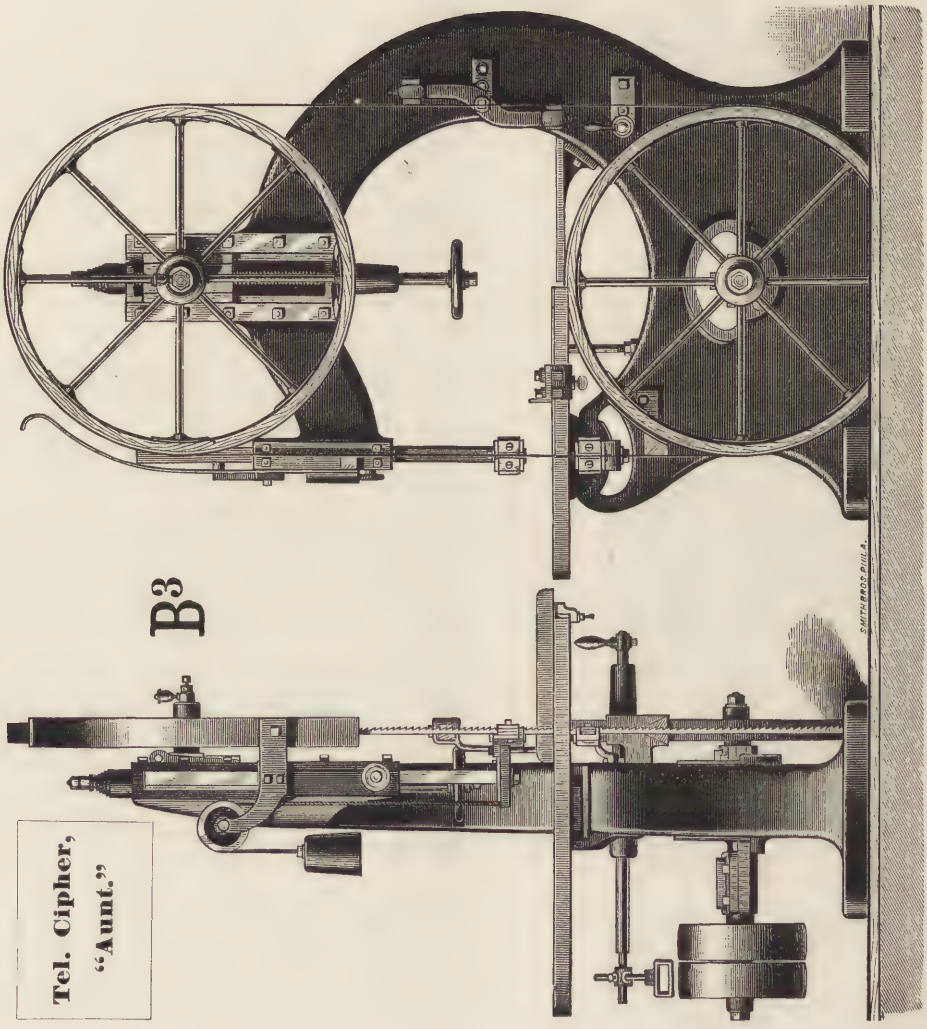
Size of tight and loose pulleys.

Before giving size of tight and loose pulleys and the speed required, we should know the kind of work the machine is intended for. Some work will bear much more speed.

Price, F. O. B., Philadelphia.

LONDON, BERRY & ORTON,
22d Street, above Arch,
PHILADELPHIA, PA., U. S. A.

Every machine is belted, adjusted and put in complete working order before it leaves the Works.



No. 3 PATENT BAND SAW MACHINE.

SPECIFICATION OF THE

NO. 3 PATENT BAND SAW MACHINE.

The Frame is cast in one piece, with rectangular cored section, and will stand a strain of **two tons** upon the wheel axis, without affecting the guide.

The Wheels are 44 inches in diameter, of wrought iron, with wood rim covered with gum cloth.

The Table is pivoted for sawing bevel lines, and fitted with an adjustable gauge for parallel slitting.

The Guide stem and upper guide are counter-weighted.

The Tension of the Blades is provided for by a very sensitive spring.

The Shafts are steel, bearings of Babbitt metal.

The Pulleys and wheels are held by planed steel keys and nuts.

The Top Wheel can be adjusted instantly and accurately to regulate the path of the saw while the machine is in motion.

The position of the saw on the wheels can be controlled by the operator without leaving his place or stopping the machine. This is a very important point, as the dust collecting on the wheels frequently causes the saw to change its path, crowding it hard against the guides, breaking the saw and otherwise injuring the blade.

The Cylindrical Back Guides, provided above and below the table, present the best surface for a saw to run against, as it is impossible to upset the back of a saw with these guides.

The Machine receives lumber *18 inches thick*, and saws to 1½ inches in width.

Every Machine is fitted with *belt-shifter, one saw, soldering tongs and scarfing frame.*

	Diameter.	*Face.*	*Speed.*
Size of tight and loose pulleys,			

Before giving size of tight and loose pulleys and the speed required, we should know the kind of work the machine is intended for. Some work will bear much more speed.

Price, F. O. B., Philadelphia.

LONDON, BERRY & ORTON,
22d Street, above Arch,
PHILADELPHIA, PA., U. S. A.

Every machine is belted, adjusted and put in complete working order before it leavss the Works.



London, Berry & Orton,

ATLANTIC WORKS, PHILADELPHIA, PA.

NEXT in importance to the machines themselves, and indeed scarcely less important, comes the subject of Band Saw Blades. As we manufacture our own saws, we are able to bring our extensive experience in the construction of Band Saw Machines to bear upon all the points connected with the manufacture of Band Saw Blades. We do not hesitate to say that, after 15 years of experience in the manufacture and sale of Band Saw Blades, during which time we have carefully and continually endeavored to bring them to their highest standard, we are warranted in the belief that it is impossible to get steel of too good a quality; so that, as a rule, we purchase the *very best stock* that we can find in any market for their manufacture.

The tempering of Band Saw Blades is an operation requiring especial care, as it is necessary not only to have the temper just right but also necessary to have it as nearly uniform as possible. Now, when we consider the great length of the blades, sometimes over fifty feet, it will be evident that the difficulties in the way of obtaining a uniform temper can only be surmounted by long experience. A Band Saw Blade is being bent and straightened from 300 to 500 times a minute when in operation, and at the same time is under a heavy strain; and nothing but the best and most uniform temper will permit it to stand under such conditions. The present tendency is toward the use of wider blades and higher speeds, so that the question of the quality and temper of the blade has a growing influence upon the general performance of the mill. Under these circumstances we cannot impress too strongly upon the purchaser the importance of using Band Saw Blades of the highest grade obtainable, nor can we sufficiently condemn the false economy which allows the use of cheap but inferior blades.

Toothing, Hammering, Rolling, Upsetting, Grinding, and Polishing are processes which require the greatest experience, skill and care; and it is obvious that with the *best of steel*, a *Fire Temper*, then subjecting *every blade* to the various manipulations required, the manufacturer is able to offer a blade which will in every respect meet the demands made upon it.

In order that these processes shall be executed in the best possible manner, we have filled our Saw Department with special tools, invented and designed especially for the purpose of making our Band Saw Blades as near perfect as the present state of the art will permit.

In ordering saws the following table should be consulted in order to avoid misunderstanding the thickness of the blade. Do not order by the gauge but find the decimal corresponding to the gauge desired, whether American or Birmingham. For example, if a saw of 20 gauge American is wanted, order .031961; but if 20 gauge Birmingham is wanted, order .035.

Number of Wire Gauge.	Decimal of an inch. American or Brown & Sharpe.	Decimal of an inch. Birmingham or Stubs.	Number of Wire Gauge.	Decimal of an inch. American or Brown & Sharpe.	Decimal of an inch. Birmingham or Stubs.
10	.10189	.134	17	.045257	.058
11	.090742	.12	18	.040303	.049
12	.080808	.109	19	.03539	.042
13	.071961	.095	20	.031961	.035
14	.064084	.083	21	.028462	.032
15	.057068	.072	22	.025347	.028
16	.05082	.065			

FINISHED SAWS, JOINED, SET AND FILED, READY FOR USE.

CODE.	Width in Inches.	Not joined, set or filed, per foot.	Joined, set and filed, per foot.	Brasing.	Buckish. 17 feet Long.	Budget. 17½ feet Long.	Buff. 18 feet Long.	Buffer. 18½ feet Long.	Buffoon. 19 feet Long.	Bugbear. 19½ feet Long.	Buggy. 20 feet Long.	Bugle. 20½ feet Long.	Bulb. 21 feet Long.	Bullock. 21½ feet Long.	Bullion. 22 feet Long.	Bulrush. 22½ feet Long.	Bulwer. 23 feet Long.	Bump. 23½ feet Long.
	In.	Brush.	Brutal.	Brute.														
Cub . . .	⅛	$0 03	$0 13	$0 20	$2 41	$2 48	$2 54	$2 60	$2 67	$2 72	$2 80	$2 87	$2 93	$3 00	$3 06	$3 13	$3 19	$3 26
Cabbage .	3/16	09	13	20	2 41	2 48	2 54	2 60	2 67	2 72	2 80	2 87	2 93	3 00	3 06	3 13	3 19	3 26
Cabal .	¼	09	13	20	2 41	2 48	2 54	2 60	2 67	2 72	2 80	2 87	2 93	3 00	3 06	3 13	3 19	3 26
Cabin . .	5/16	10	14	20	2 58	2 65	2 72	2 79	2 86	2 93	3 00	3 07	3 14	3 21	3 28	3 35	3 42	3 49
Cabinet .	½	11	15	20	2 75	2 83	2 90	2 98	3 05	3 13	3 20	3 28	3 35	3 43	3 50	3 58	3 65	3 73
Caboose .	5/8	12	16	25	2 97	3 05	3 13	3 21	3 29	3 37	3 45	3 53	3 61	3 69	3 77	3 85	3 93	4 01
Cackle . .	¾	14	18	25	3 31	3 40	3 49	3 58	3 67	3 76	3 85	3 94	4 03	4 12	4 21	4 30	4 39	4 48
Cackling .	7/8	16	20	25	3 65	3 75	3 85	3 95	4 05	4 15	4 25	4 35	4 45	4 55	4 65	4 75	4 85	4 95
Cadence .	1	18	22	30	4 04	4 15	4 26	4 37	4 48	4 59	4 70	4 81	4 92	5 03	5 14	5 25	5 36	5 47
Cadet . .	1¼	23	27	30	4 89	5 03	5 16	5 30	5 43	5 57	5 70	5 84	5 97	6 11	6 24	6 38	6 51	6 65
Cafton . .	1½	28	32	40	5 84	6 00	6 16	6 32	6 48	6 64	6 80	6 96	7 12	7 28	7 44	7 60	7 76	7 92
Caging . .	1¾	32	37	50	6 79	6 98	7 16	7 35	7 53	7 72	7 90	8 09	8 27	8 46	8 64	8 83	9 01	9 20

	Brush.	Brutal.	Brute.	Bumping 25 ft. Long.	Bunch. 32 ft. Long.	Bungling. 38 ft. Long	Bunting. 40 ft. Long	Bunion. 45 ft. Long.	Burden. 47 ft. Long.	Burdock. 50 ft. Long.	Burglar. 55 ft. Long.	
Cajole . .	2″	36	42	75	11 25	14 19	16 71	17 55	19 65	20 49	21 75	23 85
Caldron .	2½	44	50	90	13 40	16 90	19 90	20 90	23 40	24 40	25 90	28 40
Caleb . .	3	54	60	1 10	16 10	20 30	23 90	25 10	28 10	29 30	31 10	34 10
Calender .	3½	69	75	1 30	20 05	25 30	29 80	31 30	35 05	36 55	38 80	42 55
Caliber .	4	89	95	1 50	25 25	31 90	37 60	39 50	44 25	46 15	49 00	55 40
Callous .	4½	1 19	1 25	1 75	33 00	41 75	49 25	51 75	58 00	60 50	64 25	72 43
Calm . .	5	1 44	1 50	2 00		48 50	59 00	62 00	69 50	72 50	77 00	84 50
Calmness	5½	1 59	1 65	2 25			64 95	68 25	76 50	79 70	87 00	95 48
Caloric. .	6	1 74	1 80	2 50			70 90	74 50	83 50	87 10	92 50	101 50
Canoes .	7	2 09	2 15	2 75				88 75	99 50	103 80	110 25	121 00
Camp . .	8	2 44	2 50	3 00					115 50	120 50	128 00	140 50
Campaign	10	3 44	3 50	3 50						168 00	178 00	195 50

When saws are received, great care should be used in unfolding them, as rough handling may bend them. They should also be carefully examined when they are put on the machine, and care taken that they do not bear against the guides when running.

All imperfections *must be noted* and reported *before the saws are used.* A saw can be spoiled in five minutes by running it, or by bad filing or setting. We are only responsible for the saw as we deliver it, *not after it has been used.*

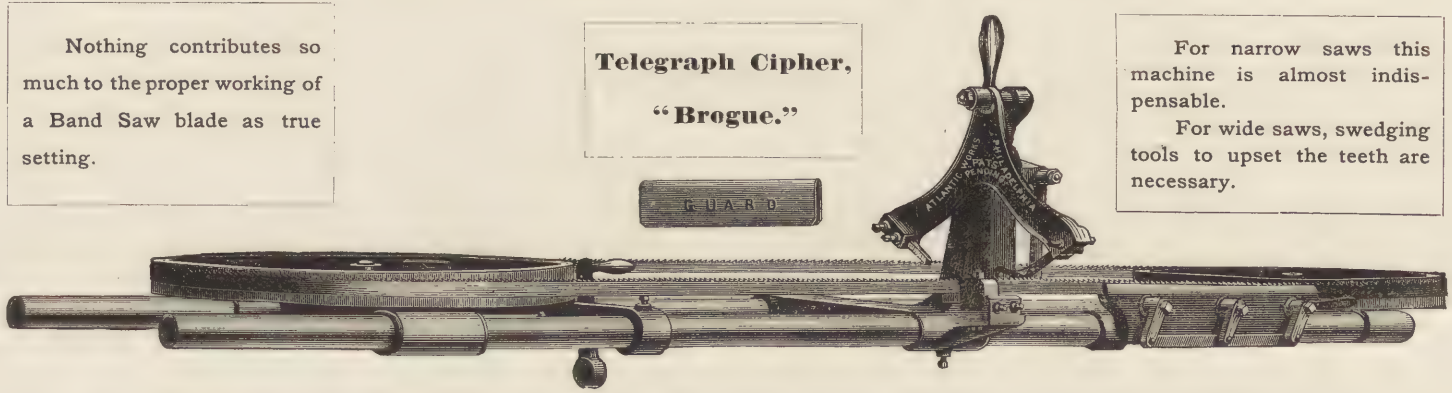
On these pages are illustrated implements required for joining, setting, and filing Band Saw Blades.

PATENT BAND SAW SETTING MACHINE.

Nothing contributes so much to the proper working of a Band Saw blade as true setting.

Telegraph Cipher,

"Brogue."



For narrow saws this machine is almost indispensable.

For wide saws, swedging tools to upset the teeth are necessary.

Patent Band Saw Setting Machine and Filing Frame.—An effective and simple device for setting Band Saw Blades is attached to the filing-frame. A glance at the engraving will show that the setting is done by a hammer in the hand of the operator. The saw is strained and passes between two steel blocks; feed is imparted to the saw by a pawl, operated by the hammer handle. Every blow of the hammer sets a tooth, and the setting can be done as fast as one can count, or at the rate of about six feet per minute. The feed is adjustable to any pitch of tooth in an instant.

The machine is wholly of metal, except the rim of the wheels. The vise is arranged to close instantly for a length of twenty-four inches, by means of cams on the front.

To Operate the Saw Setting Machine.—Having put the saw on the wheels and strained it, see that the teeth are the proper height on the anvil blocks to give the set required; this is done by putting a piece of steel or iron under the saw. This strip of steel or iron is held tight between the anvil blocks, and should be thicker than the saw blade you are setting, thereby allowing the blade to pass freely between the blocks.

Adjust the feed so that two teeth are fed at every stroke of the hammer, then adjust the hammer nearest to you (by the set screws in the head) so that it will strike the tooth fair, bring the other hammer down and adjust in the same way, place the guard on the saw, and with one hand on the guard and the other on the hammer handle, you are ready to set the saw blade.



SOLDERING TONGS. SCARFING FRAME.



FILING VISE.

The Scarfing Frame is planed true, and arranged in the most convenient manner for scarfing the ends and holding the Saw Blade while soldering or brazing. **The Soldering Tongs** are made of wrought iron, and are furnished of various sizes, modified to suit special sizes. **The Vise** is shown detached, and is arranged to be used independent of the Filing Frame, and can be fastened to a bench when the frame is not wanted.



BAND SAW FILES (half size of four inch).

Attention is called to our **Band Saw Files** with round corners, that give a circular form to the bottom of the spaces between the saw teeth, and prevent fracture. An important saving both of saw blades and files is affected by this improvement.

Price of Band Saw Setting Machine and Filing Frame, complete,	$50 00
" Scarfing Frame, twenty-seven inches long,	4 50
" Soldering Tongs, with one and one-half inch jaws,	2 50
" Filing Vise, twenty-four inches long,	7 50
" per doz., of 4-inch Files,	2 50
" " 6-inch "	4 00
" Silver Solder, per ounce,	2 00

LONDON, BERRY & ORTON,

22d Street, above Arch,

PHILADELPHIA, PA., U. S. A.

DIRECTIONS FOR

Erecting and Operating

LONDON, BERRY & ORTON'S

Hand Feed Patent Band Saw Machinery.

Set the Machine level, so that the base will bear at the four corners equally.

In putting the Machine together, the Adjusting Screw for the Top Wheel is put in from the top; pass it down through the bearings until the Nut can be put over the top, run the Screw through the Nut, and put on the Spring and Nuts on the top, jamming them firmly to prevent their working off. The Saddle can then be put in, being careful that the Lugs pass over the top of the Nut.

Set the Top and Bottom Guides so that a Saw of average width will touch both alike. They can then remain in that position, unless for very deep sawing, in which case the Top Guide must be slightly moved back.

The tension of the blade must be a matter of judgment. Never overstrain in order to work a dull Saw.

In putting on the Saw, or in changing from one Saw to another, set the Top Wheel so that the back of the Saw bears gently against the Guides.

Use good oil, and watch the bearings carefully for a time after starting. They require no adjusting, and if kept clean and oiled will require no other attention. The Packing in the Top Wheel Stud should be removed three or four times a year.

If the Guide Pin becomes worn, turn it enough to get a new bearing.

The APPARATUS for JOINING the BLADES is intended for SILVER SOLDER, which is a more convenient process than brazing, and makes a good joint when properly done. The ends of the blade should be filed to give a NEW SURFACE—scarfing to about one-half at the ends, making the lap from ½ to ¾ inches long, according to the width of the Blade. Then with a piece of hard smooth steel (a round or half-round file, ground smooth, will do), rub across the ends and edges of the Saw, bearing hard on the corners that are to lay together in forming the lap; this will turn up a light feather edge, which, although perhaps not discernible to the eye, can readily be felt with the hand, and will prevent the silver from running out. Wash the surface clean with MURIATIC ACID, put a piece of the solder in the joint, and clamp the joint with the TONGS, which must be heated TO A FULL RED HEAT, and left on until they are black. After joining, file down the Saw to the proper thickness. It is well to take the set out of the Saw before making the joint, and observe that the back of Saw is STRAIGHT, and fits against the CLAMPING FRAME.

Band Saw Re-Sawing Machinery.

The fact is now well established that the Band Saw is the only machine that will successfully re-saw lumber. No other machine will fill all the requirements of this class of work. A segmental circular saw will only re-saw thin lumber, and its capabilities are necessarily very limited; but a Band Re-Saw may be used for re-sawing from the thinnest stock up to any thickness which this class of work demands; and it may properly be called a universal machine.

The peculiar advantages of the Band Saw, due to its thin blade, direct action, and smoothness of cutting, are nowhere exhibited to a greater advantage than in re-sawing. Blades from 18 to 24 gauge are used, and it is obvious that with such a thin saw very little lumber can be wasted in the kerf.

In the following pages will be found illustrations and descriptions of Band Re-Sawing Machines suited for every required size and capacity. The smaller machines, arranged to receive lumber from 10 to 16 inches in width, are built on the same general plan as the plain Band Saw Machines, already described; and by changing the table, which carries the feed-works, they may be converted in a few minutes into machines for plain sawing.

When wider stock is to be cut, and larger capacity is desired, the No. 5 and No. 6 machines are beyond competition. Being built especially for re-sawing wide lumber, they possess advantages which are peculiarly their own. The framing of these machines is similar to that of our large log mills, and secures a stiffness and rigidity which is absolutely necessary in order to obtain fine work at high speeds. The feeding mechanism is constructed with the greatest care; and the variable friction feed permits a change in the rate of feed to be made without stopping the machine.

The completeness of these machines renders them unrivaled for all kinds of re-sawing, and their capacity, which ranges from fifteen to fifty thousand feet per day of ten hours, places them at the head of all contrivances for re-sawing.

These machines are built of four sizes.

No. 2, 40-inch wheel, takes lumber to 10 inches in width.
No. 3, 44 " " " 16 " "
No. 5, 60 " " " 26 " "
No. 6, 72 " " " 30 " "

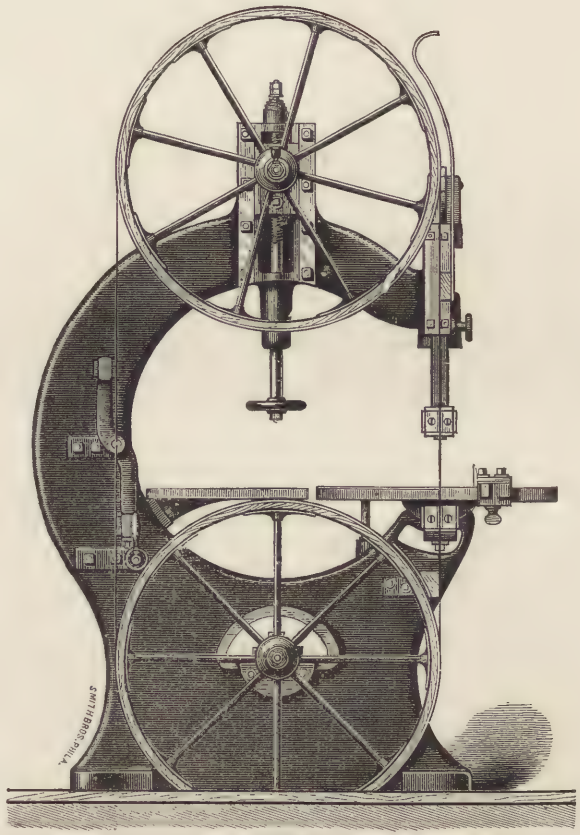


Fig. 1.

B^2

Tel. Cipher, "Author."

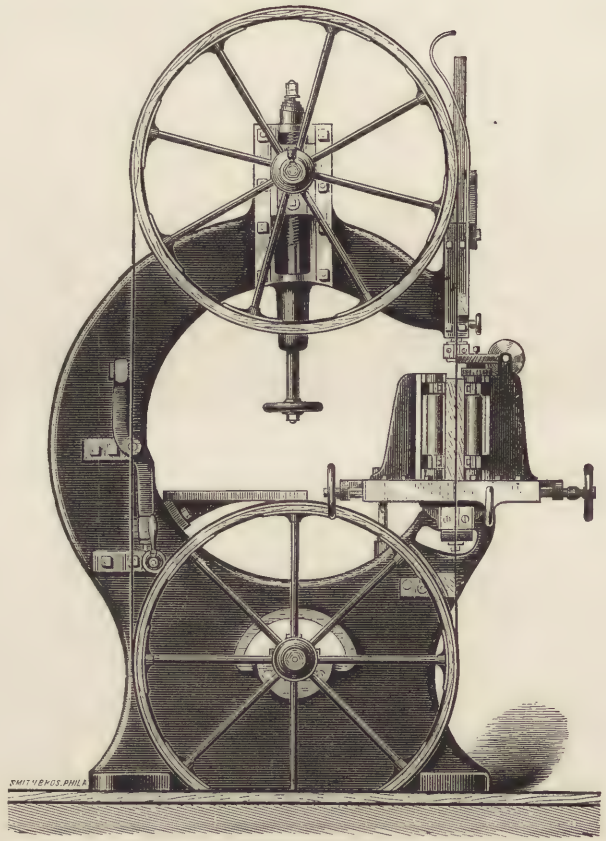


Fig. 2.

No. 2, PATENT BAND SAW RE-SAWING MACHINE.

No. 2 Patent Band Saw Re-Sawing Machine.

In the engraving, Fig. 2 shows the No. 2 **Band Saw Re-Sawing Machine,** with feed rolls to receive lumber **four inches thick and ten inches wide.**

Fig. 1 shows the machine with a plain table for hand feeding.

The Feeding Gearing has five changes of speed.

All the adjustments are on one side of the machine, and can be made in a moment's time.

The change in tables is made in less than five minutes, making a complete and convenient machine for hand work, or (in a few moments) a Re-Sawing Machine.

The Framing is cast whole, with rectangular cored section, capable of withstanding a strain of one and one-half tons on the wheel axis without affecting the guides.

The Wheels are 40 inches in diameter, of wrought iron and wood, faced with gum cloth.

The position of the saw on the wheels can be controlled by the operator without leaving his place or stopping the machine. This is a very important point, as the dust collecting on the wheels frequently causes the saw to change its path, crowding it hard against the guides, breaking the saw and otherwise injuring the blade.

The Tables are pivoted to cut bevel lines.

The Upper Guide and guide stem are counter-weighted.

Has spring compensating device to regulate the tension on the blades.

Each Machine is furnished with the re-sawing table and rolls, and with a plain table for hand work. One ¾ inch and 1½ inch Band Saw Blades, are also furnished, and Belts for Feed Rolls, Soldering Tongs, Scarfing Frame, and directions for setting up the machine.

	Diameter.	*Face.*	*Speed.*
Size of tight and loose pulleys,			

Price, F. O. B., Philadelphia.

LONDON, BERRY & ORTON,
22d Street, above Arch,
PHILADELPHIA, PA., U. S. A.

Every machine is belted, adjusted and put in complete working order before it leaves the Works.

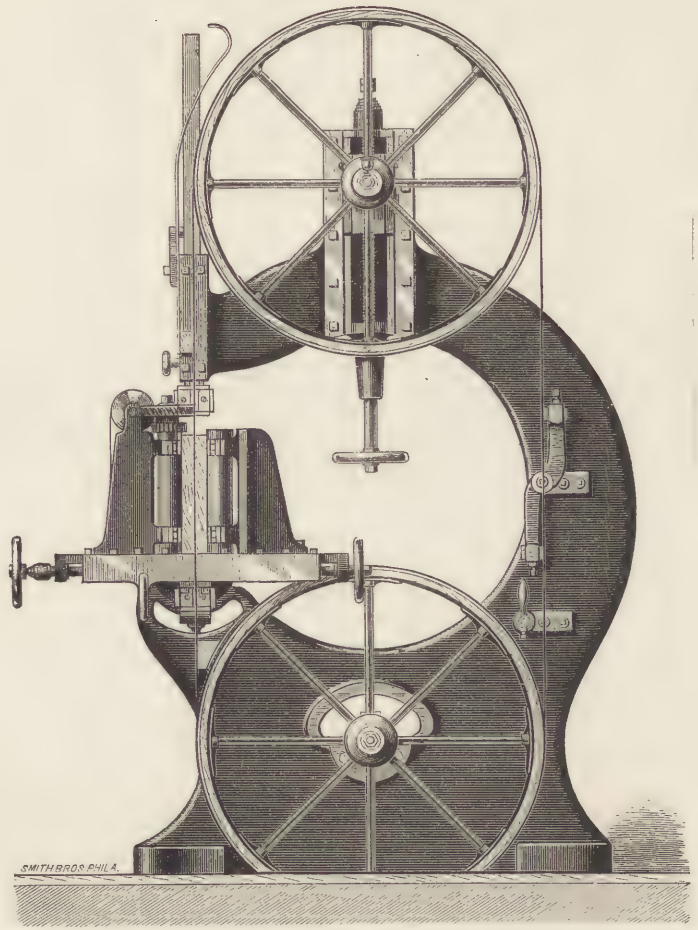


Fig. 1.

B 3

Telegraph Cipher.
"Autumn."

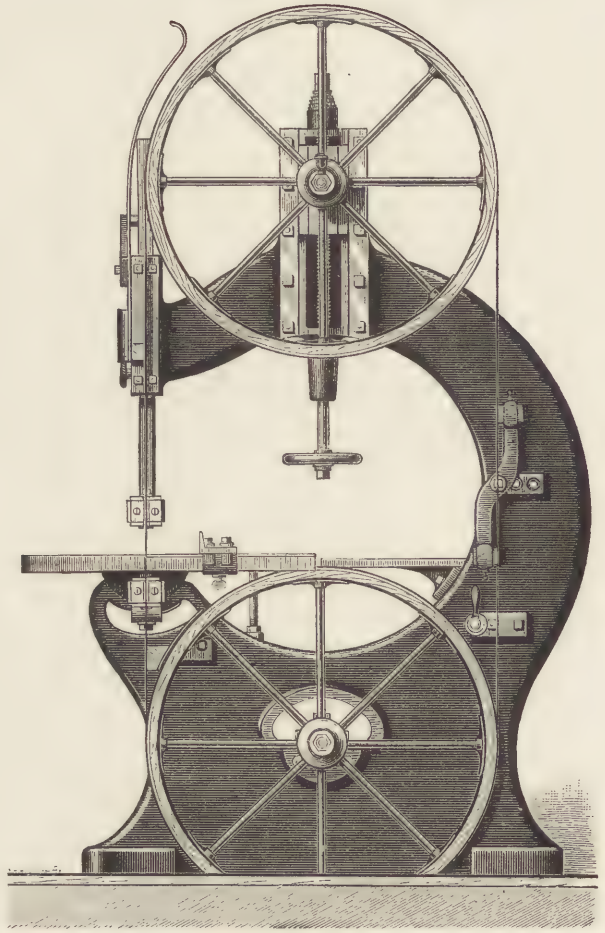


Fig. 2.

No. 3 PATENT BAND SAW RE-SAWING MACHINE.

No. 3 PATENT BAND SAW RE-SAWING MACHINE.

In the engraving Fig. 1. shows the No. 3 **Band Saw Re-Sawing Machine,** with feed rolls to receive lumber **six inches thick and sixteen inches wide.**

Fig. 2 shows the machine with a plain table for hand feeding.

The Feeding Gearing has five changes of speed.

All the Adjustments are on one side of the machine, and can be made in a moment's time.

The change in tables is made in less than five minutes, making a complete and convenient machine for hand work, or (in a few moments) a Re-Sawing Machine.

The Framing is cast whole, with rectangular cored section, capable of withstanding a strain of one and one-half tons on the wheel axis without affecting the guides.

The Wheels are 44 inches in diameter, of wrought iron and wood, faced with gum cloth.

The position of the saw on the wheels can be controlled by the operator without leaving his place or stopping the machine. This is a very important point, as the dust collecting on the wheels frequently causes the saw to change its path, crowding it hard against the guides, breaking the saw and otherwise injuring the blade.

The Tables are pivoted to cut bevel lines.

The Upper Guide and guide stem are counter-weighted.

Has spring compensating device to regulate the tension on the blades.

Each Machine is furnished with the re-sawing table and rolls, and with a plain table for hand work. One ¾ inch and one 1¾ inch Band Saw Blades are also furnished, and Belts for Feed Rolls, Soldering Tongs, Scarfing Frame, and directions for setting up the machine.

	Diameter.	*Face.*	*Speed.*
Size of tight and loose pulleys,			

Price, F. O. B., Philadelphia.

LONDON, BERRY & ORTON,
22d Street, above Arch,
PHILADELPHIA, PA., U. S. A.

Every machine is belted, adjusted and put in complete working order before it leaves the Works.

No. 5 PATENT BAND SAW RE-SAWING MACHINE.

ATLANTIC WORKS.

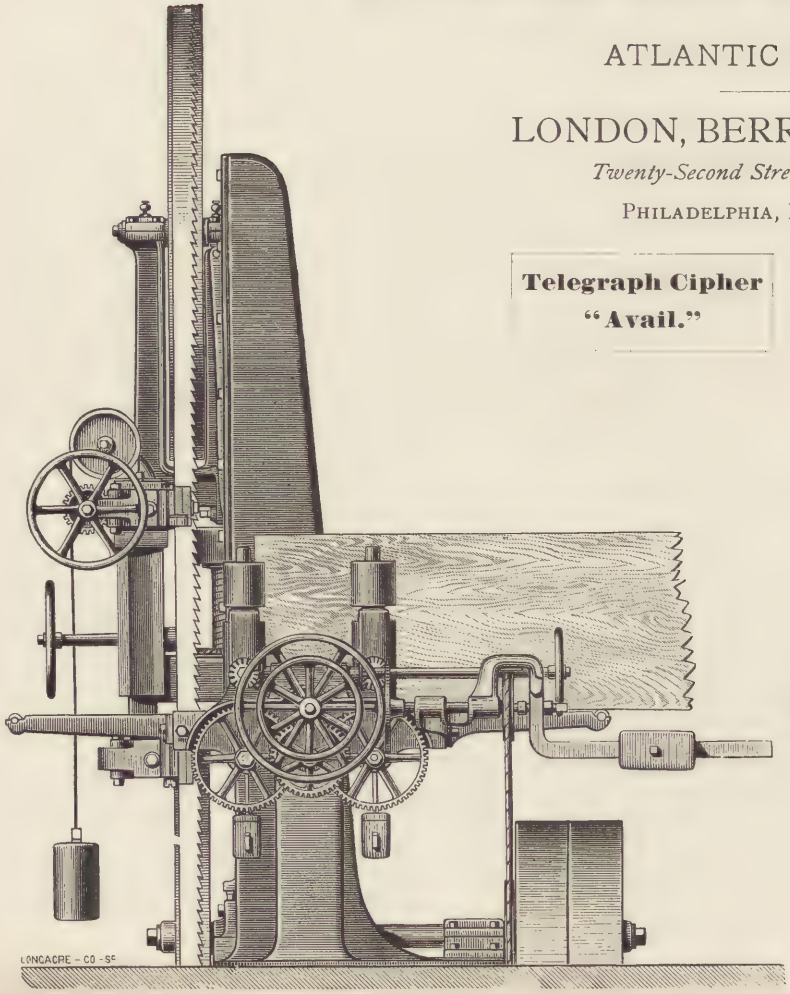
LONDON, BERRY & ORTON,

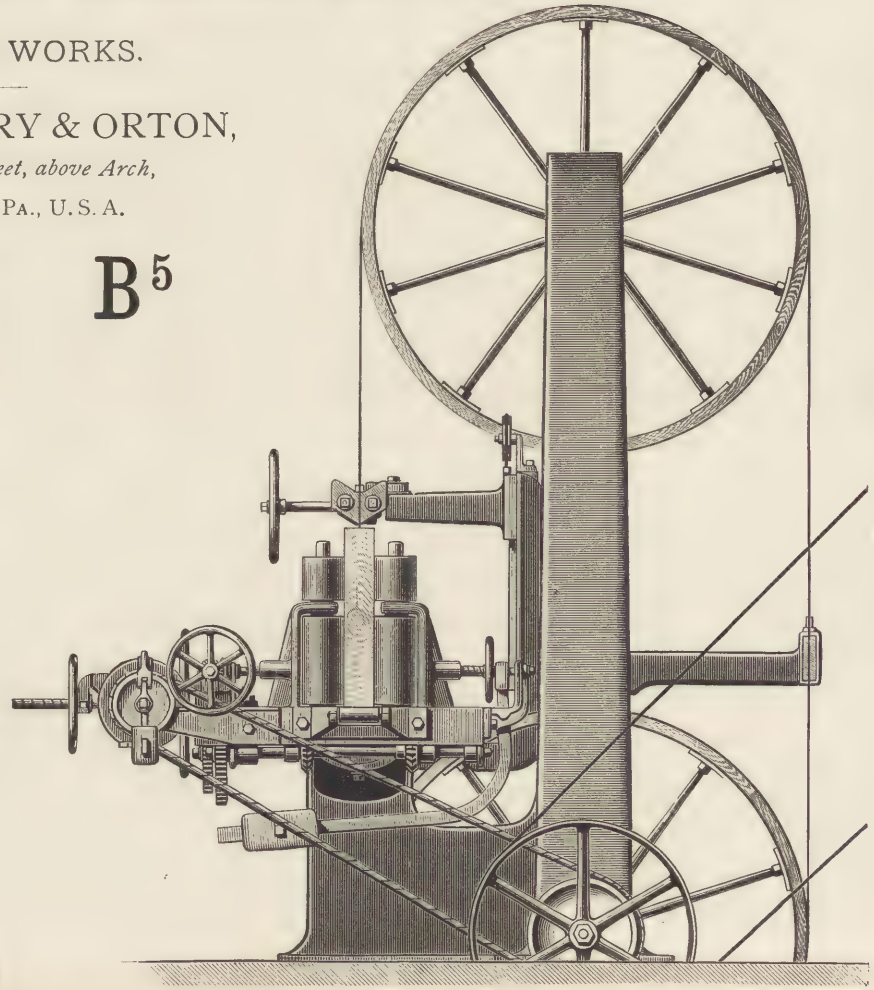
Twenty-Second Street, above Arch,

PHILADELPHIA, PA., U.S.A.

Telegraph Cipher
"Avail."

B 5





No. 5 Patent Band Saw Re-Sawing Machine.

The Frame is cast in one piece with a rectangular cored section.

The Wheels are 60 inches in diameter, of wrought-iron, covered with wood and faced with gum cloth and warranted to stand the tension of blades 3 inches wide, and are safe from centrifugal strain.

The Top Wheel has a vertical adjustment of **16 inches** and bearings on both sides of the wheel.

The Lower Wheel Shaft has an outside bearing, not shown in the engraving.

The Bearing Supports rest on springs that equalize the tension on the blades.

The Machine will re-saw lumber up to **26 inches in width and 13 inches in thickness**; that is, you can cut in the centre of lumber **10 inches thick,** or on the side of lumber **8 inches thick,** or you can put in a piece **13 inches thick,** cutting **5 inches** on one side and **8 inches** on the other side.

The Feeding Mechanism consists of four rolls, supported on frames which are gibbed down to a heavy base, this base being supported in a semi-circular seat secured by a radial bolt, so that the rolls can be inclined for bevel work.

All Four Rolls are driven by means of a friction device which permits a change in the rate or direction of the feed to be made without stopping the machine, and which retains its full feeding power for all rates of feed.

The Machine is furnished with one saw 2½ inches wide, Scarfing Frame, and Soldering Tongs, and directions for setting up the machine.

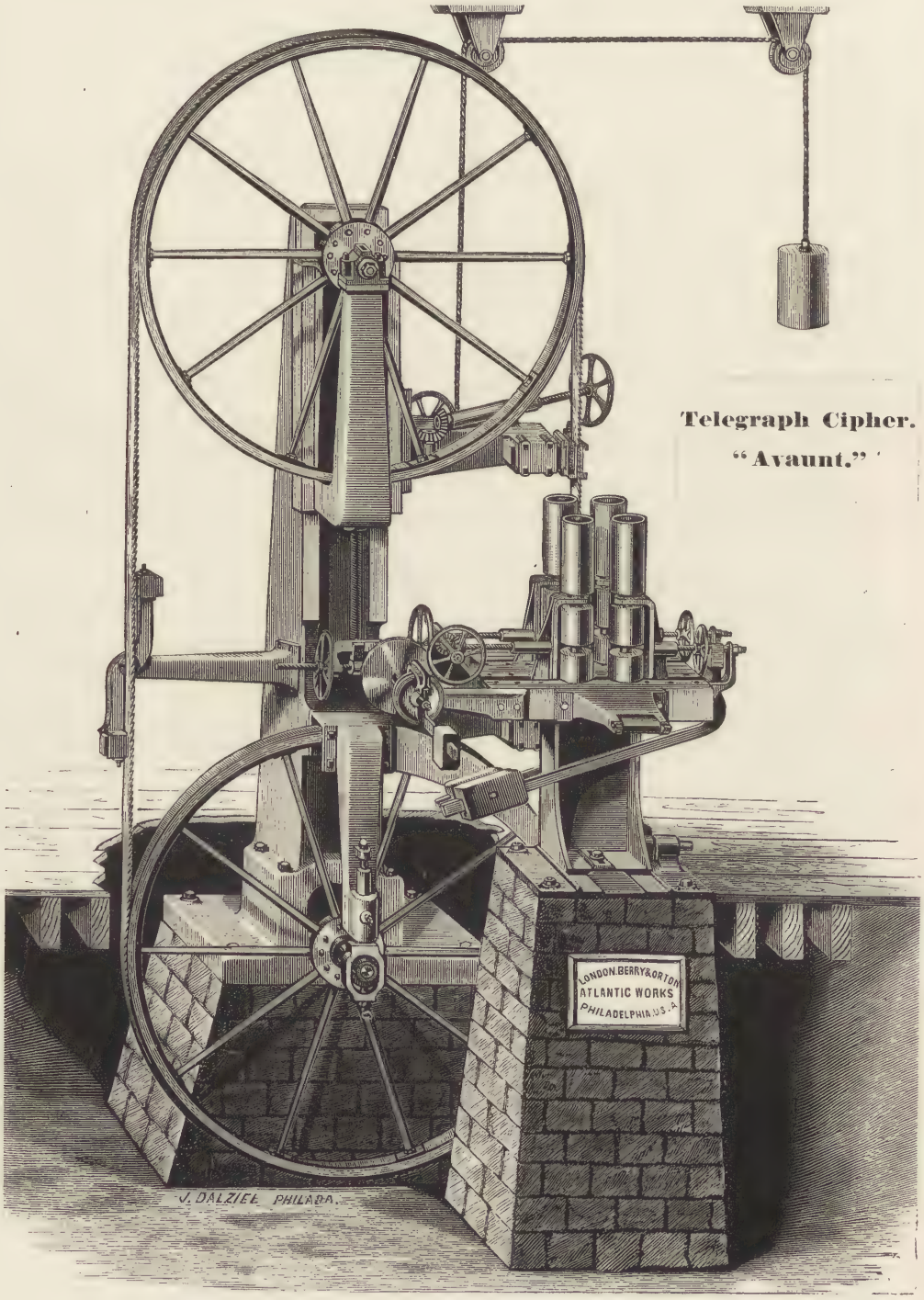
	Diameter.	*Face.*	*Speed.*
Size of tight and loose pulleys.			

Price, F. O. B., Philadelphia.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

No. 6 Patent Band Saw Re-Sawing Machine.



Telegraph Cipher.

"Avaunt."

No. 6 Patent Band Saw Re-Sawing Machine.

Capacity, fifty thousand per day of ten hours. Will take in lumber 30 inches wide, 13 inches thick; that is, you can cut in the centre of lumber 10 inches thick, or on the side of lumber 8 inches thick, or you can put in a timber 13 inches thick and cut 5 inches on one side and 8 inches on the other side.

The Wheels (made under our patent) are 72 inches in diameter, of wrought iron, covered with wood and faced with gum cloth, are safe from centrifugal strain and warranted to stand the tension of blades 6 inches wide.

The Top Wheel has bearings on both sides.

The Lower Wheel and shaft has adjustable bearings and also has outside bearing.

The Tension of the Saw is adjusted instantly, and is very sensitive and effective.

The Feeding Mechanism consists off our rolls, supported on frames, which are gibbed down to a heavy base, this base being supported in a semi-circular seat secured by a radial bolt, so that the rolls can be inclined for bevel work.

All Four Rolls are driven by means of a friction device, which permits a change in the rate or direction of the feed to be made without stopping the machine, and which retains its full feeding power for all rates of feed.

Every Machine is furnished with one saw 4 inches wide, Scarfing Frame, Mending Tongs, and directions with blue prints to erect the machine.

	Diameter.	*Face.*	*Speed.*
Size of tight and loose pulley.			

Price, F. O. B., Philadelphia.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Testimonials.

The following Testimonials represent the Re-Sawing Machines in various places; so that parties who desire may learn more as to their operation in the hands of mill men.

OVER 4,000 FEET PER HOUR.

UNION BOX FACTORY.
San Francisco, December 27, 1886.

PARKE & LACY, San Francisco, Cal.

Gentlemen:—After running two of London, Berry & Orton's No. 5 Band Re-Sawing Machine for 8 years, it affords me great pleasure to testify to the excellence of construction displayed in them, and to their great efficiency, as well as to the saving of stock made in re-sawing with them.

Our re-sawing comprises redwood, sugar pine, yellow pine of California, Oregon pine, and all the hard and soft woods of the Pacific Coast and of the Eastern States, and we swage our saws to 3-32 inch wide.

Much having been said about the difficulty of sawing redwood, I desire to make the following statement of our every-day work in that line. Our feed in re-sawing redwood on an average depth of cut of 16″ is 42′ 6″ per minute and this is our regular working feed, and produces 3,400 feet of re-sawing as we count it per hour.

If it were estimated as face measure in re-sawing 1 inch boards it would count as 6,800 feet per hour.

Now this I believe could readily be increased fully one-quarter, and I would undertake to re-saw over 4,000 feet per hour on one of the machines. Yours truly,

R. E. MOREY.

CUTTING 91 LINEAL FEET PER MINUTE.

Whitehall, N. Y., November 22, 1886.

To LONDON, BERRY & ORTON.

Gentlemen:—The No. 6 Band Saw Re-Sawing Machine we purchased from you has been working quite steadily for over a year, and to our entire satisfaction. It will re-saw on steady running 7 pieces of 13 feet long 11 inch wide pine deals per minute, and does good work with a thin saw.

THE WHITEHALL LUMBER COMPANY, LIMITED,
W. N. WERKS, Secretary and Treasurer.

PLEASED TO SHOW IT.

GEORGE PLOWMAN COMPANY, N. E. Cor. 17th and Fairmount Avenue.
Philadelphia, October 8, 1886.

MESSRS. LONDON, BERRY & ORTON.

Gentlemen:—In 1878 we put in one of your No. 5 Band Re-Saws, which has been in continual use ever since, and has given us entire satisfaction. Our Mr. Eisenbrey, who has had charge of the machine ever since we put it in, tells us that he can saw 1,000 feet of white pine per hour without any trouble. We would be pleased to show any one the re-saw in operation. Yours, etc.,

GEORGE PLOWMAN COMPANY,
ALBERT E. PLOWMAN, Secretary.

EXCEEDS OUR EXPECTATIONS.

Office of BURNHAM, STANDEFORD & CO.'S Planing Mill.

Oakland, Cal., February 23, 1877.

MESSRS. BERRY & PLACE, San Francisco.

Gentlemen:—The No. 5 London, Berry & Orton Band Saw Re-Sawing Machine we bought of you, far exceeds our expectations. We can re-saw of redwood, sugar pine, or hard wood, as it comes along, about 10,000 feet per day. We have sawed of redwood, 1,000 feet in forty minutes. We have also re-sawed from one plank, an inch and a quarter thick, three panels, each 5-16 thick after being planed on both sides.

The machine is just what we want, and we don't see how we could get along without it.

Yours, etc., W. N. MILLER,
Construction Manager

We fully endorse the above.
BURNHAM, STANDEFORD & CO.

PROPERLY PROVEN.

Boston, Mass., April 7, 1877.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen:—The No. 5 Band Re-Sawing Machine, purchased of you through Messrs. Hill, Clark & Co., of Boston, has been properly proven according to contract, and is accepted. The machine is working to our entire satisfaction, and your superintendent, Mr. Orton, is released from any further care or attention in the matter.

Yours truly, GLENDON COMPANY,
Treasurer, N. M. JEWETT.

NOTHING FOR REPAIRS.

East Boston, December 14, 1878.

MESSRS. LONDON, BERRY & ORTON.

Gentlemen:—Referring to your inquiry about the Band Re-Saw you put in . . . here April, 1877, I have to say, that since the machine was set up it has been in constant use, working satisfactorily, and costing comparatively nothing for repairs. Although it has been used principally on coarse spruce, it works successfully on pine, kiln-dried or green walnut, ash, cherry, mahogany and cedar. We are cutting generally about 10,000 feet per day. I think the owners have saved twice the cost of it since it has been in use. Yours truly,

JOHN M. JENKS.

P. S.—The 10,000 feet per day is of spruce of common width, say 8 to 12 inches; of 6-inch pine, which we sometimes re-saw; can cut nearly twice as much. Mr. Orton will understand all about the stock we saw, and see the cause of so much difference.

ENTIRELY SATISFACTORY.

Bridgeport, Conn., April 19, 1877.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen:—The No. 5 Band Re-Sawing Machine, purchased of you through Messrs. C. B. Rodgers & Co., of New York City, has been properly erected and proven according to contract, and is therefore accepted. The machine is working to our entire satisfaction, and your superintendent, Mr. Orton, is released from any further care or attention in the matter.

Yours truly,
HAWLEY & BEECHER.

MOST SUCCESSFUL MACHINE IN AMERICA.

Messrs. LONDON, BERRY & ORTON. Bridgeport, December 16, 1878.

Gentlemen.—I have had the care of and running of your No. 5 Band Re-Sawing Machine for nearly two years, at C. H. Hawley's Planing Mill, Bridgeport, Conn., and with a competent operator I believe it to be (after handling circular mills) the most successful re-sawing machine now in the American market. Very truly yours,

FRED. D. CHAPMAN, Foreman for C. H. HAWLEY.

Messrs. LONDON, BERRY & ORTON. Bridgeport, December 15, 1878.

Gentlemen.—Your Band Saw Re-Sawing Machine I am running is a good machine.

Yours, etc.,

C. H. HAWLEY.

GIVES SATISFACTION IN EVERY RESPECT.

Office of the E. N. WELCH MFG. CO., Manufacturers of CLOCKS AND MOVEMENTS.

Messrs. LONDON, BERRY & ORTON. Forestville, Conn., December 14, 1878.

Gentlemen.—The Band Sawing Machine which we purchased of you in 1877 has now been running some fifteen months, and we take pleasure in saying it has given us satisfaction in every respect. Yery respectfully yours,

WELCH, SPRING & CO.

AN EXCELLENT MACHINE.

Office of NEW HAVEN CLOCK COMPANY.

Messrs. LONDON, BERRY & ORTON. New Haven, Conn., April 17, 1879.

Gentlemen.—The No. 5 Re-Sawing Machine you put up for us in November, 1878, is running in a satisfactory manner, and we consider it an excellent machine.

Yours truly,

NEW HAVEN CLOCK COMPANY.

AFTER TWO YEARS' USE.

Messrs. LONDON, BERRY & ORTON. Utica, N. Y., December 17, 1879.

Gentlemen.—I have been running one of your No. 5 Band Saw Re-Sawing Machines over two years, and it affords me great pleasure to say that it far exceeds my expectations. It certainly does better work than any re-saw I know of. It is quickly and handily adjusted to cut different thicknesses, and, in my opinion, is the best re-saw for general jobbing and custom mills I know of in the market. Yours truly,

SYLVESTER DERING.

WOULD NOT PART WITH IT.

SKILLINGS, WHITNEYS & BARNES LUMBER COMPANY.

Messrs. LONDON, BERRY & ORTON. Ogdensburg, N. Y., September 11, 1882.

Gentlemen.—Some nine months ago we placed one of your No. 5 Re-sawing Machines in our planing mill. Since that time it has been in constant use, and has fully demonstrated its working capacity to be all that you claim for it. So highly satisfactory has it been to us that, were it impossible to obtain another, we would not part with it under any consideration, and feel no hesitation in recommending it to be the best machine for re-sawing lumber in the market. Yours respectfully,

M. S. LEE, Superintendent of
Skillings, Whitneys & Barnes Co.'s Lumber Planing Mills.

HAS CERTAINLY NO EQUAL.

Office of LHOTE & CO.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa. New Orleans, October 11, 1882.

Gentlemen:—We take pleasure in recommending your No. 5 Re-Saw to any factory doing a large quantity of splitting. For the re-sawing of boards it has certainly no equal, being a great saver of material, especially in cypress, walnut, and, in fact, all hard and soft woods having no gummy substance to interfere with the wheels.

Yours truly, LHOTE & CO.

KERF ONE-SIXTEENTH OF AN INCH. GREAT SAVING.

Office of JAMES W. COOPER & BROTHER,
1706 to 1720 Washington Avenue.

MESSRS. LONDON, BERRY & ORTON. Philadelphia, August 13, 1875.

Gentlemen:—Your favor of the 11th instant at hand, and in reply would say that the No. 6 Band Saw Re-Sawing Machine you put into our factory in July, 1874, has been in operation ever since. If we remember right, you guaranteed to re-saw 3 to 4 thousand feet per day. The lumber which we mostly use is walnut, and *we have cut over 6 thousand feet per day, making 12 thousand feet per day of re-sawed lumber, and consider 6 thousand feet a fair day's work.*

The saving in lumber is a great advantage. With the band saw machine we only take a kerf of 1-16 of an inch, while with any other machine we cannot get along without a great deal more kerf. We can now make two ⅜-inch boards, planed on all sides, out of one-inch board. Should you desire to use our name as reference, you are welcome to do so, as we are satisfied with the machine, and also that band saw machinery is a success.

Yours truly, JAMES W. COOPER & BROTHER.

MOST RELIABLE MACHINE EVER USED.

CENTRAL PACIFIC RAILROAD,
Office of the Master Car Builder,

MESSRS. LONDON, BERRY & ORTON. Sacramento, September 9, 1875.

Gentlemen:—We have had one of your large band saws in use for about two years. I can recommend it as the most reliable machine we have ever used for re-sawing. We have given it some very severe tests, in both green and dry lumber, and it has always proven itself equal to the task. We can cut from five to six thousand surface feet per day, according as the lumber may be hard or soft; cut varying from one inch to four feet.

Very respectfully, BENJAMIN WELCH,
Master Car Builder, Central Pacific Railroad Co.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Special to Lumbermen.

We have in the following pages endeavored to give you in a general way all the information possible regarding Band-Saw manipulations, and the result of their use in the conversion of timber into lumber; but, as you are aware, in almost every case, there are some conditions arising, which need special attention, and can only be explained by communication with customers; we therefore invite correspondence in any and all matters pertaining thereto.

PRICES.—We do not claim to undersell everybody, but do claim to furnish perfectly satisfactory machinery, and at a price as low as such work can be furnished by any company on earth, material and workmanship considered.

To save time and annoyance when writing for prices, the following questions should be clearly answered: Kind of wood to be sawn; length of longest log; diameter of largest log; whether right or left-hand mill is wanted; quantity desired to be sawn in ten hours; whether to be run by water or steam-power; also state if you have ever had any experience with Band Mills.

Personal interviews at our works are solicited.

LONDON, BERRY & ORTON,
Atlantic Works.

Instructions for Erecting London, Berry & Orton's Band Log Mill.

BY following these instructions closely, customers will save themselves trouble and annoyance.

First. Locate the track nearest the saw, find the highest place on the mill floor where this track will intersect it, from this point run a level to establish the floor line from which all measurements must be made in erecting the mill. After building the foundation its proper height, bed the base plate to it in good cement, taking care that it is level both ways on planed surface where the column will stand, and that the lower wheel-shaft is parallel with, and the proper distance from, the floor and track line. Next, put the feed pulley on the lower wheel shaft, after cleaning out the bearings and oil holes well, adjust the shaft to its place. Before erecting the column, have it well cleaned off, the saddle put on, placing the screw, nut and ratchet that the saddle rests on, in their place, with the screw through the lug on the front of the column. After placing the heavy coil spring on the end or head of the screw, and in the pocket at the lower end of the saddle, erect the column, bolting it firmly to the base plate. Next clean out the bearings in the yoke or U-shaped piece that carries the upper wheel, mount the wheel in the same, and raise it to its place. Next put on the lower wheel; before crowding it all the way on, lay the shield on the top of the wheel and crowd them back together, following up with the nut, tapping the wheel lightly, at the same time you have strain on the nut. Next, put on the guide arms and guides, arrange the feed works, taking care that all bearings are well cleaned, oiled, and properly adjusted. Clean all grease from the friction plates to avoid slipping and trouble at the starting of the mill. Always go by the figures on the blue print and in no case attempt to measure them.

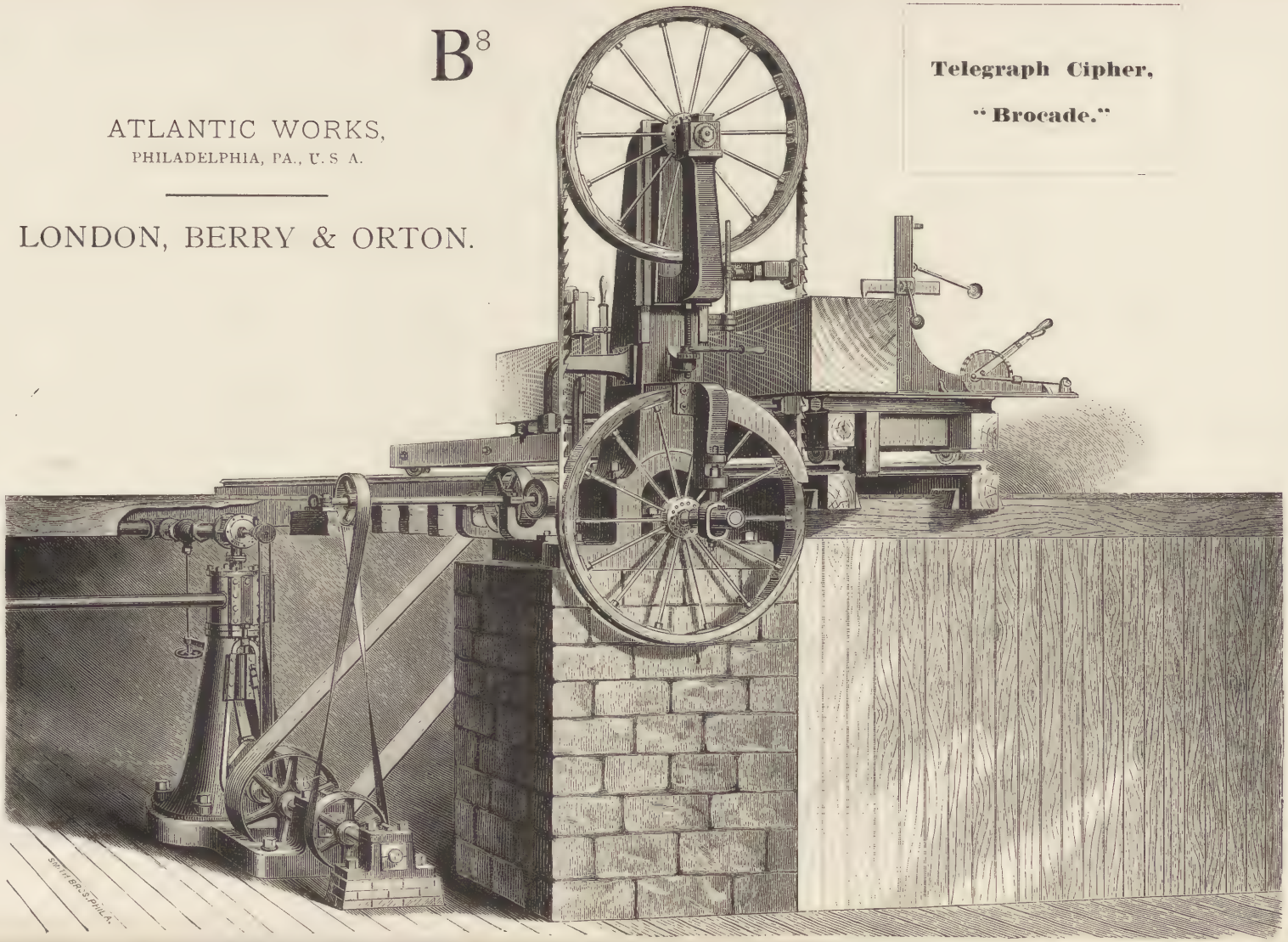
London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.

B^8

ATLANTIC WORKS,
PHILADELPHIA, PA., U. S. A.

LONDON, BERRY & ORTON.

Telegraph Cipher,
"Brocade."



B8 Patent Band Saw Mill,

6 Foot Wheel.

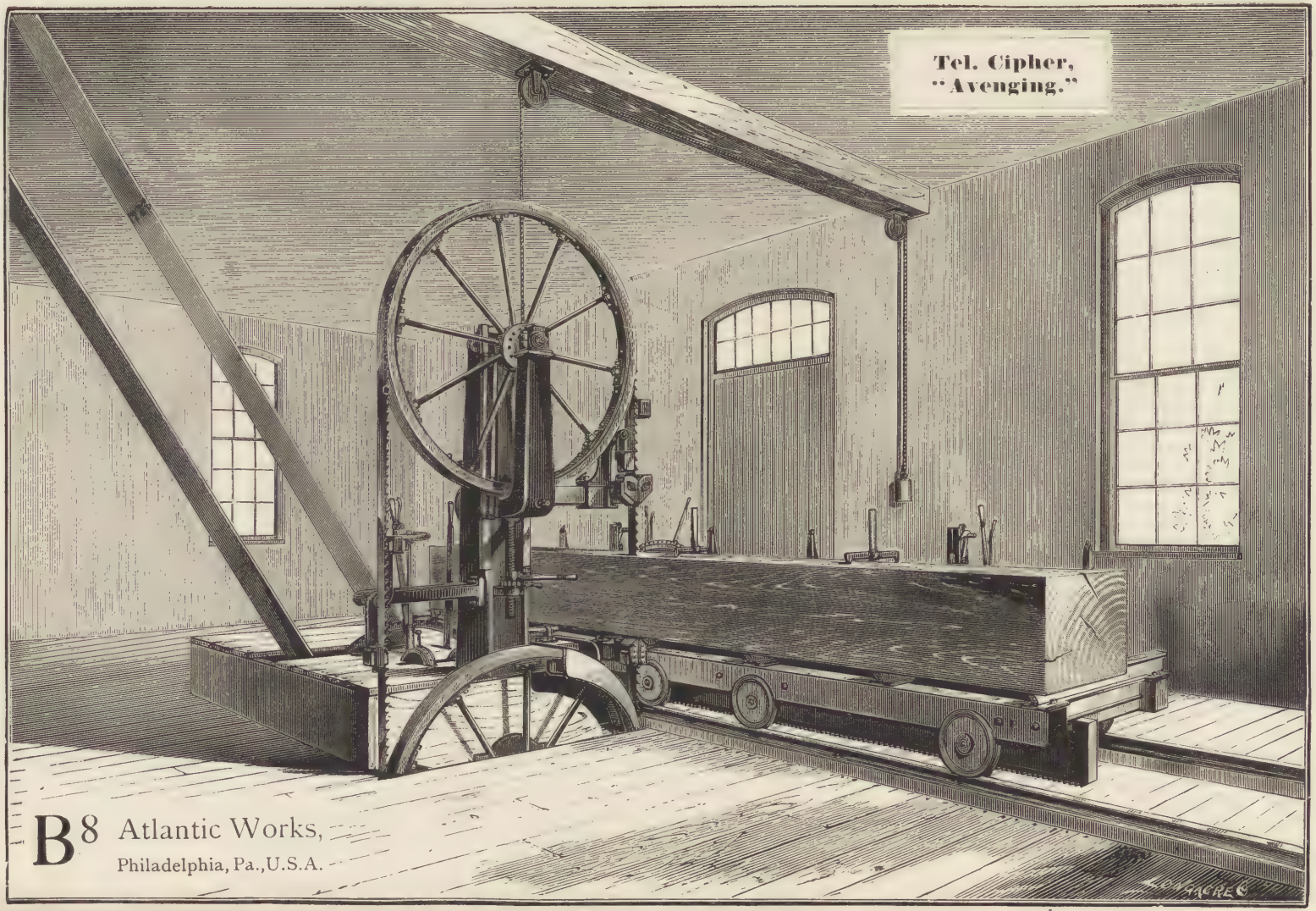
Arranged with Independent Engine.

WHERE the conditions are not favorable for the use of the combined mill and engine, the arrangement shown in the engraving may be recommended. In this case the engine is placed in the basement and belted directly to the mill without the use of any intermediate shafting or belting. It is always desirable to drive a band mill from an independent source of power, so as to avoid the variations in speed usually noticeable in engines with widely varying loads, such as occur in wood-working establishments. The arrangement illustrated shows a No. 8 Band Saw Mill, with patent wrought-iron wheels, 6 feet in diameter, mounted on steel shafts, and driven directly by the high speed vertical engine as shown. The mill is provided with patent counter-weighted guide arm, patent saw deflector, variable friction feed, and spring tension, and the whole arrangement is complete in itself.

The arrangements shown in these pages are only a few among the many plans which may be adopted in introducing Band Saw Mills. We are constantly being called upon to place Band Mills in positions formerly occupied by circular mills, and are then obliged to make more or less modification in the arrangements for the transmission of the power to the mill. We are therefore well prepared to make plans for almost every variety of position likely to occur, and are prepared to furnish the gearing, shafting, mule posts, hangers, or whatever may be necessary to accomplish the result in the most suitable manner. Our extensive experience in placing a large number of mills, enables us readily to determine upon the best plan to be adopted under any given conditions, and we are at all times prepared to give the necessary advice to purchasers.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



B8 Atlantic Works,
Philadelphia, Pa., U.S.A.

Description of

B^8 Patent Band Saw Mill.

6 Foot Wheel.

THE accompanying engraving represents the No. 8 Patent Band Saw Mill, erected in J. W. Cooper's factory in Philadelphia.

The Column and Feed Works are mounted on a solid cast-iron base plate.

The Wheels (patent) are 6 feet in diameter, built of wrought iron. The rim is covered with wood, faced with gum cloth for the saw to run on.

The Lower Wheel Shaft has 3 bearings, one outside of the wheel. The upper and lower wheels are adjustable, and hung on steel shafts.

The Guide Arms are counter-weighted (patented), for convenience in adjusting, and to prevent accident from falling.

The Feed is variable at will.

The Saw is strained by a combination of screw and spiral spring, and an index is provided so that the amount of strain can be seen at any time. The Springs are accurately tested and proportioned so as to be capable of straining the saw to about one-fifth of the elastic limit of the steel.

The Patent Saw Deflector is attached in such a manner that when the direction of the carriage is reversed, the saw is drawn back from the surface of the cut, to prevent marking the log, and set back into line when the cut is made.

The No. 8 Mill will cut a log 4 feet square, or square up a log 5 feet in diameter.

Prices given F. O. B., Philadelphia.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Testimonials of No. 8 Band Mills.

In presenting the following testimonials, we wish especially to call attention to the successive endorsements given to our mills by many of the firms using them.

Up to January 1, 1887, the advertisers have built a total of 1,248 Band Saw Machines. Of this number, over 100 were Log Mills and 50 were Resawing Machines. In view of the wide experience gained in the construction of this large number of machines, it will be evident that all the peculiar conditions of Band Sawing have been met and provided for.

The testimonials speak for themselves as to the capacity and satisfactory operation of the machines.

GOOD IN A JOBBING TRADE.

San Francisco, October 18, 1875.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen:—The No. 8 Band Saw Machine purchased from you in 1872 gives us entire satisfaction, and we can recommend it as a first-class mill. It exceeds our expectations in its capacity, and is no trouble to us whatever.

Our business is a jobbing trade, and we have never kept the machine busy on one job during a whole day, and cannot tell how much work we could do in that time.

We have a Carriage and also a pair of Feed Rollers, and use it for log sawing and resawing by a simple change. Our work is on all kinds of timber. On cedar logs 24 inches through, we can readily use a feed of 20 feet per minute.

Respectfully yours, SAN FRANCISCO MANUFACTURING CO.

MAKING ONE-EIGHTH MORE LUMBER.

Erwinna, Pa., July 22, 1877.

MESSRS. LONDON, BERRY & ORTON, Atlantic Works, Philadelphia, Pa.

Gentlemen:—The following may be of some interest to lumbermen: The two Band Saw Mills I bought of you about two years ago are doing very well, and I consider them a great lumber-saving mill, as the No. 7 for sawing logs takes but one-eighth inch kerf, thereby making one-eighth more lumber, if cut into inch boards, from the same stock of logs, than can be cut with the muley or circular saw. This saving of lumber will soon pay the first cost of the mill. Yours truly, ISAAC S. STOVER.

ENORMOUS SAVING.

Allegheny City, Pa., November 27, 1878.

MESSRS. LONDON, BERRY & ORTON.

Gentlemen:—In answer to your inquiry about the Band Mill furnished us through your agent here, Mr. A. G. Harmes, would say that it has exceeded our highest expectation, and we are delighted with it. We placed a gang and a muley mill with the band mill, and now have one muley and the band mill running side by side. After three months' trial, we have found that the band mill, running upon the same kind of lumber and consuming the same amount of power as the muley mill, cuts more than twice the amount of lumber in a given time, cuts smoother, more accurate, and the saving of kerf over that of the muley mill almost pays for the manufacturing of the lumber. We are still running the small feed pinion on the band mill, having been too busy to stop and put on a larger pinion that belongs to the mill; and until we make this change we cannot tell what the capacity of the mill will be.

Our sawing is oak and pine, and we are running with all the feed that the pinion will give us, about forty-five feet lineal per minute, through both large and small logs, oak as well as pine, without changing the feed; and we believe that we can run with at least one-third more feed than we are now carrying on all kinds of logs.

Our experience in lumbering covers a period of twenty-five years, during which time we have used nearly everything in the line of saw-mill machinery, including muley, gang and circular mills; but for accurate sawing and economical manufacture of lumber, our band mill surpasses any mill we have ever used, and the *enormous* saving in lumber by the use of the band mill is bound to make them the saw mill of the future. We are pleased to notice that you are selling more of them in our section. In conclusion would say you are at liberty to refer any one inquiring in regard to band saw mills to us.

Very respectfully, WISCONSIN SAW MILL CO.,

Office and Mill, 363 River Avenue, Allegheny City, Pa.

O. H. P. WILLIAMS, Superintendent

HIGHLY PLEASED.

New York, September 29, 1882.

MESSRS. LONDON, BERRY & ORTON.

Gentlemen :—The new Band Saw Mill we ordered of you is now in operation. It works finely and satisfactorily in all respects. We are highly pleased with it; in fact, it is simply immense, especially the outside bearing on lower shaft, which we consider one of the best improvements that could have been made.

We highly recommend it, feeling assured, from our experience, that any one desiring this saw will find it entirely satisfactory. Yours truly, STRINGHAM & VAN NESS.

IT KEEPS IN GOOD REPAIR.

L. LANGHAM, Manufacturer and Wholesale Dealer in Hardwood.
Lumber Yard, S. W. Cor. Ninth Street and Washington Avenue.
Philadelphia, August 30, 1882.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—I take pleasure in saying that the Band Saw Mill and machinery pertaining to the same, which you built for my saw mill at Nashville, Tenn., in December, 1880, has been running regularly, and gives perfect satisfaction in every respect. It keeps in good repair, and does excellent work. The band saws also made by you are good.

Yours respectfully, L. LANGHAM.

CUTTING POPLAR.

OFFICE OF L. LANGHAM,
Nashville, Tenn., January 31, 1885.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—We are cutting poplar, and have just finished up a raft making 43,000 feet of 5-8, and 18,000 feet of 4-4 lumber, which we cut in 44 hours. This is not counting the rough cull, which we do not measure. There was about 1,500 feet of them, making our average a little over 15,000 feet per day of ten hours, which I think is pretty good work for our No. 8. J. D. ALLEN, General Manager.

This is the No. 8 Band Mill put into Mr. Langham's Mills in 1880.

SATISFACTORY IN EVERY RESPECT.

Elizabeth, W. Va., September 18, 1882.

A. G. HARMES, ESQ., Pittsburg, Pa.

Dear Sir :—In reply to your inquiry in regard to working of the London, Berry & Orton Band Saw Log Mill purchased through you, will say that it has proved satisfactory in every respect. Have been running more than one year, the last ten months continuously. Can saw from twelve to fourteen thousand feet of poplar lumber per day, and have no trouble with, or repairs to make on, any of the working parts of the machine, which seems to be of most superior and substantial workmanship. My sawing is nearly all inch boards, and time of running ten hours per day.

I am, in fact, highly pleased with the mill, and could wish no better. It has exceeded all my expectations at the time of purchase. Yours truly, J. C. HALE.

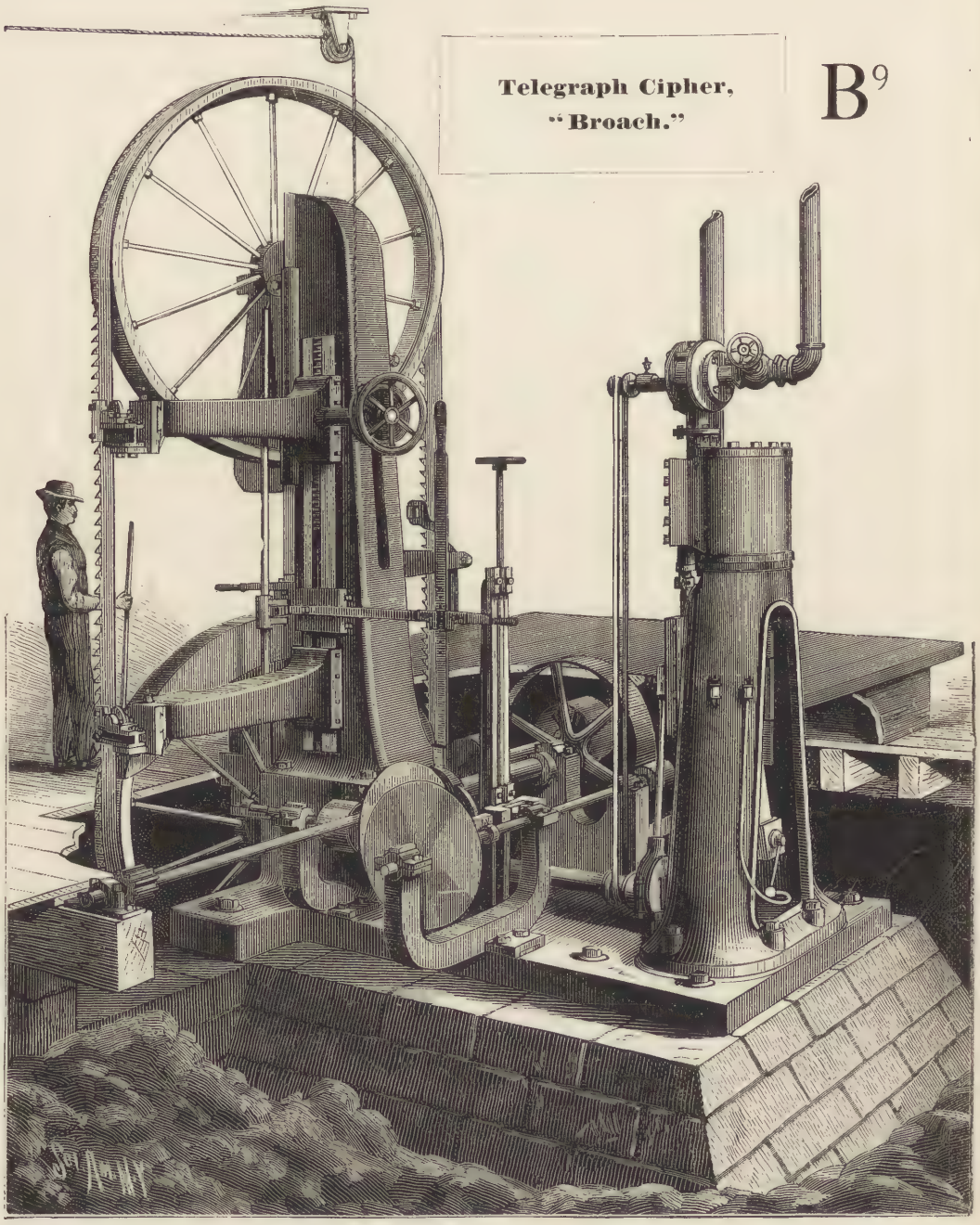
HAVE DISCARDED CIRCULAR MILLS.

DODGE MANUFACTURING CO., Manufacturers of Hardwood Lumber.
Mishawaka, Ind., March 29, 1883.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—The No. 8 Band Saw Mill which you erected for us in 1881, we are pleased to say, works to our entire satisfaction, as our recent order for a new No. 9 will demonstrate. We find it, for capacity, way beyond our expectations; as, for instance, we made in January last a test day, and produced, with two changes of saws only, in eight hours and five minutes, 14,372 feet poplar lumber, all five-eighths inch thick. We have discarded our circular mills, and will use nothing but bands for all kinds hardwood logs, and consider our savings in kerf a bonanza.

Yours truly, DODGE MANUFACTURING CO.,
W. H. DODGE, President.



B9 Right-Hand Mill, with Engine.

NOTE.—As you stand facing the teeth of the saw, if the carriage is to your right, it is a Right-Hand Mill; if the carriage is to your left, it is a Left-Hand Mill.

B^9 Patent Band Saw Mill.

8 Foot Wheel.

Engine and Mill Combined.

Specification of Mill.

PATENT WHEELS—8 ft. diameter, wrought-iron arms and rim. The rim is covered with wood, the wood with gum cloth, and the wheels are warranted to stand the tension of eight-inch saw blade.

The Upper and Lower Wheel Shafts are steel, and have bearings on each side of the wheels, close to the hub, provision being made for adjustment in every direction. The adjustments of the upper wheel, which control the position of the saw on the wheels, can be made while the mill is running.

The Feed Works are arranged with a friction device, by means of which the rate of feed can be varied from zero to full speed, without stopping the mill.

The Patent Saw Deflector is attached in such a manner that when the direction of the carriage is reversed the saw blade is automatically drawn back from the surface of the cut, to prevent marking the log, and set back into line when the cut is made.

The Column and the Engine feed works are mounted on a cored cast-iron base plate, so that all parts will maintain their correct relative positions, and the whole mill possesses firmness and rigidity in the highest degree. The hand wheels and levers controlling the mill are all in close proximity to each other, so that the sawyer can, in one position, start or stop the mill, change the direction of the carriage, alter the rate of feed, and adjust the position of the saw on the wheels.

The No. 9 Mill will cut a log that is 5 feet square, or take in a log 6 feet in diameter.

Specification of Engine.

The Engine is proportioned in every respect for high speed, the guides are bored in line with the cylinder. The piston rod and crank pin are of steel, and of ample dimensions. The valve is double-ported, and completely balanced. The connecting rod ends are forged solid, no straps being used. Ample provision is made for thorough lubrication of all parts. The engine is arranged so that the sawyer has complete control of it without leaving his position for running the mill. The engine and mill together form a very compact and substantial arrangement, dispensing altogether with the expensive and troublesome belts, bevel gears, mule posts, etc., otherwise necessary. The Mill and Engine is put in perfect working order before it leaves our works.

Prices are given F. O. B., Philadelphia.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

B^9 Patent Band Saw Mill.

8 Foot Wheel.

Arranged to be Driven by Belt.

Specification of Mill.

PATENT WHEELS—8 ft. diameter, wrought-iron arms and rim. The rim is covered with wood, the wood with gum cloth, and the wheels are warranted to stand the tension of an eight-inch saw blade.

The Upper and Lower Wheel Shafts are steel, and have bearings on each side of the wheels, close to the hub, provision being made for adjustment in every direction. Both the adjustments of the upper wheel, which controls the position of the saw on the wheels, can be made while the mill is running.

The Feed Works are arranged with a friction device, by means of which the rate of feed can be varied from zero to full speed, without stopping the mill.

The Patent Saw Deflector is attached in such a manner that when the direction of the carriage is reversed the blade is automatically drawn back from the surface of the cut, to prevent marking the log, and set back into line when the cut is made.

The Saw is strained by a combination of screw and spiral spring, and an index is provided, so that the amount of strain can be seen at any time. The springs are accurately tested and proportioned so as to be capable of straining the saw to about one-fifth of the elastic limit of the steel.

The Column and all the feed works are mounted on a cored cast-iron base plate, so that all parts will maintain their correct relative positions; and the whole mill possesses firmness and rigidity in the highest degree. The hand wheels and levers controlling the mill are all in close proximity to each other, so that the sawyer can, in one position, start or stop the mill, change the direction of the carriage, alter the rate of feed, and adjust the position of the saw on the wheels.

The No. 9 Mill will cut a log that is 5 feet square, or take in a log 6 feet in diameter. Price, F. O. B., Philadelphia.

Every Machine is adjusted and put in complete working order before it leaves the Works.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

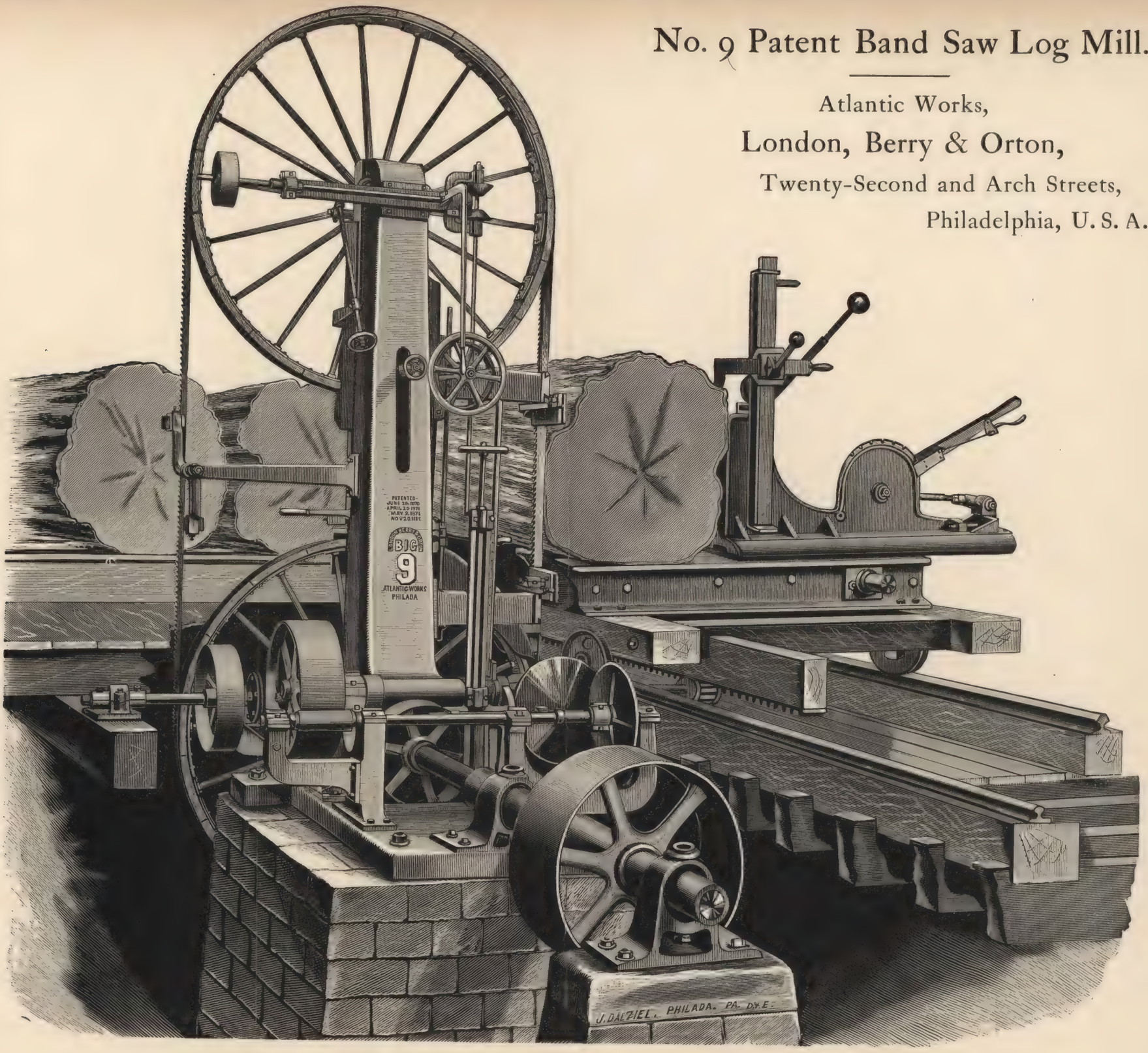
No. 9 Patent Band Saw Log Mill.

Atlantic Works,

London, Berry & Orton,

Twenty-Second and Arch Streets,

Philadelphia, U. S. A.



Back of
Foldout
Not Imaged

Saving 20 Per Cent. from Worthless Dust.

A FEW moments' calculation will serve to convince any one of the great saving in lumber which results from the use of the Band instead of the Circular Saw. This is quite a consideration, and should be duly appreciated. The scarcity of timber in some parts of our country, and the great value of foreign woods, require that there should be the least possible loss in its sawing. The saving which results from the use of the Band Saw can easily be demonstrated.

It is well known, that in cutting large logs when the double circular mill has to be used, that it is impossible to produce a wide board that is marketable. There is always an off-set where the two saws meet. This makes it necessary to rip the board the whole length, making one wide and one narrow board. This narrow board is generally too narrow for uppers, and has to be graded lower, or perhaps has to be thrown away, not on account of the quantity, as it is generally clear lumber, but simply because it has been poorly manufactured. With the Band Mill we save all this, by making each and every board perfect, no matter how wide or how thin.

If we take a log 24 inches square, and 25 feet long, and cut it up, first with a Band Saw, and then with a Circular Saw, the difference will appear as below:

	Lumber in Feet		Saving	
Thickness	Band Mill	Circular Mill	In feet of Lumber	In per cent.
1	1105	915	190	21
3/4	1440	1130	310	27
5/8	1695	1280	415	32
1/2	2050	1480	570	38
3/8	2600	1745	855	49
1/4	3600	2137	1467	68

The value of this saving in cash depends upon the market value of the lumber, for instance—in a day's cutting, on a Circular Mill, of 20,000 feet of inch poplar boards, the market value at $16.00 per 1,000 feet is $320.00. Now, the Band Mill from the same quantity of logs will produce 24,200 feet of lumber, worth $387.20, a clear gain of $67.20. If instead of poplar we take walnut, worth say, $70.00 per 1,000 feet, the difference will be $294.00. In cutting thinner lumber, the saving is still greater, as will be seen on reference to the table above.

Calculate Your Waste on Last Year's Cut.

London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.

Testimonials of No. 9 Band Mills.

DOING MUCH BETTER THAN LAST YEAR.

C. LAMB & SONS,
Manufacturers of Lumber, Lath and Shingles.
Clinton, Iowa, June 18, 1886.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—We run the old Band Mill, at least the first one of any, on the 15th all day on logs which we cut up entirely, with the following results :

Boards,	42,850 ft.
1¼ in. and 1½ in.,	4,250 ft.
2 in. dimension,	5,165 ft.
Total cut of Band Saw for one day,	52,265 ft.,

or 102 logs. This was 10 hours' work, and is the best result of anything we have yet done. This is doing much better than last year. Yours truly,

A. LAMB, Sec'y and Treas.

OUR RECORD OF A WEEK'S CUT.

Davenport, Iowa, November 15, 1886.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—This is our record of a week's cut with the two Band Mills we bought of you this summer :

Thursday, November	4th,	98,958 ft.	
Friday,	" 5th,	101,276 ft.	
Saturday,	" 6th,	91,588 ft.	—Lost one hour on account breaking of chain.
Monday,	" 8th,	87,578 ft.	—Lost one hour 20 minutes on account lack of [fuel.
Tuesday,	" 9th,	96,930 ft.	
Wednesday,	" 10th,	99,474 ft.	
Total for week,		575,804 ft.	

On the 4th we sawed Beef Slough logs which scaled 191 feet; on the 5th, 6th, 8th, and 9th Stillwater logs which scaled 196 feet; and on the 10th Beef Slough logs which scaled 154 feet to the log. These logs were not selected but taken as they run, hollow butts, culls, everything was run through. The lumber was sawed into 1 inch, 1½ inch, 2 inch and some timber as was most suitable ; and the lumber was measured after being trimmed. Often we made as many as 10 cuts in a minute from 12 and 16 inch cants, 16 feet long, and at one time we made nine cuts from a 16 foot log, besides turning it twice in one minute. The saws used were 17 gauge. Yours truly,

CHR. MUELLER,
Per F. W. MUELLER.

COMPARED WITH THOSE OF OUR NEIGHBORS.

PAINE LUMBER CO.,
Lumber, Lath, Shingle, Moulding, Sash, Door and Blind Manufacturers.
Oshkosh, Wis., December 20, 1886.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—In regard to the work done with the mills we bought of you will say: From choice logs as they run we make 35,000 feet of good lumber in eleven hours with each mill. We did saw as high as 40,000 feet for a few days, but this was exceptional. Such logs as we did saw, run about four to the thousand. 30,000 to 35,000 we consider a good day's work with the "Band."

Manufacturers are generally desirous of having lumber sawed straight and smooth. Of course, if they do not care for this class of lumber, they may crowd through considerable more. We are pleased with your mills as compared with those our neighbors are using of other manufacture. These are the material facts, and if you are able to make any selections from this letter, we shall be glad to have you do so.

Very truly yours, PAINE LUMBER CO.,
GEO. M. PAINE, Vice-President and Treasurer.

PLEASED WITH ITS OPERATION.

DIMOCK, GOULD & COMPANY,
Lumber, Woodenware and Paper Pails,
Moline, Ill., December 23, 1886.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen:—Herewith draft No. 54,937 on New York, balancing invoice the 12th November.

Regarding band saws, we have used one of your band mills the past year, and cheerfully say that we are pleased with its operations.

Respectfully yours, DIMOCK, GOULD & CO.,
CHAS. M. HILL, Secretary.

FIFTEEN-DAY CONSECUTIVE CUT.

Memorandum.

To
London, Berry & Orton,
Philadelphia, Pa.

From
Dodge Manufacturing Co.,
Manufacturers of
Hardwood Lumber,
Mishawaka, Ind., Aug. 6, 1883.

GENTLEMEN:

Your favor of August 3d to hand. In answer, we hand you herewith copy of our Lumber Register for fifteen days (consecutive), on one mill, the "Big 9" of your make, which we consider as perfectly satisfactory to us. Each day consists of ten hours, cut as follows:

Monday,	July 16, 1883,	5/8	inch Walnut,	13,400 feet.
		2	" "	7,190 "
			Total,	20,590 "
Tuesday,	July 17, 1883,	5/8	inch Walnut,	16,320 "
		2	" "	6,140 "
			Total,	22,460 "
Wednesday,	July 18, 1883,	5/8	inch Walnut,	11,030 "
		2	" "	9,260 "
			Total,	20,290 "
Thursday,	July 19, 1883,	3/8	inch Walnut,	11,440 "
		5/8	" "	3,672 "
(Saw broke)		2	" "	9,840 "
			Total,	24,952 "
Friday,	July 20, 1883,	3/8	inch Walnut,	7,672 "
		3	" "	3,907 "
		1 3/4	" "	8,600 "
			Total,	20,179 "
Saturday,	July 21, 1883,	3/8	inch Walnut,	4,807 "
		2	" "	13,509 "
		2 1/2	" "	6,950 "
			Total,	25,266 "
Monday,	July 23, 1883,	1	inch Sycamore,	13,410 "
		2	" "	14,700 "
			Total,	28,110 "
Tuesday,	July 24, 1883,	1	inch Sycamore,	3,440 "
		2	" "	7,300 "
		5/8	" Poplar,	4,504 "
		1 3/8	" "	11,400 "
			Total,	26,644 "

Wednesday, July 25, 1883,	2	inch Sycamore,	17,805	feet.
	1	" "	7,604	"
		Total,	25,409	"
Thursday, July 26, 1883,	2	inch Sycamore,	18,560	"
	1	" "	12,040	"
		Total,	30,600	"
Friday, July 27, 1883,	⅝	inch Cherry,	1,900	"
	2	" "	7,080	"
	2	" Maple,	7,071	"
		Total,	16,051	"
Saturday, July 28, 1883,	2	inch Maple,	23,296	"
	1	" "	307	"
		Total,	23,603	"
Monday, July 30, 1883,	2	inch Maple,	21,704	"
	1	" "	805	"
		Total,	22,509	"
Tuesday, July 31, 1883,	1	inch Beech,	14,500	"
	1½	" "	3,908	"
		Total,	18,408	"
Wednesday, Aug. 1, 1883,	⅝	inch Poplar,	19,800	"
	1⅜	" "	7,309	"
	2	" "	1,905	"
		Total,	29,014	"

We conclude from the above you can draw an average line satisfactory to yourselves.

Yours truly,
DODGE MANUFACTURING CO.,
W. H. DODGE, President.

LARGE CUT IN KENTUCKY.

KENTUCKY LUMBER COMPANY, Williamsburg, Kentucky.
R. N. ARCHER, President.

Williamsburg, Ky., November 8, 1884.

R. N. ARCHER, ESQ.

Dear Sir:—The mill cut yesterday 135 walnut logs, 32,806 feet, and 93 poplar logs, 50,521 feet. Total, 228 logs, 83,327 feet.

Yours truly,
KENTUCKY LUMBER COMPANY.

LARGE CUTTING CAPACITY.

Williamsburg, Ky., November 15, 1884.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen:—After a trial of six weeks of the four No. 9 Log Band Mills bought of you, we wish to say they have given perfect satisfaction, and have a better cutting capacity than we ever thought a band mill could have. We have cut 85,000 feet, scale measure, Doyle's rule, in one day, and near half of this amount was walnut.

We have made several cuts of two hours' run, and cut over 20,000 feet of poplar lumber, measured Doyle's rule. The actual amount of lumber cut would exceed the above figures. To say we are pleased with the mills would not express our feelings.

We think them the best Band Mill in existence.

Yours respectfully, KENTUCKY LUMBER COMPANY,
By R. N. ARCHER, President.

WE THINK THIS GOOD CUTTING.

August 18, 1885.

Our mill cut to-day 102,914 feet, scale measure, poplar logs. One mill cut over 33,000 feet. We think this good cutting.

September 2, 1885.

One of your Band Mills cut 45,295 feet in 9 hours and 42 minutes yesterday. Total cut 107,113 feet. One of the four mills only run 2 hours and 20 minutes during the day, owing to a broken block.

KENTUCKY LUMBER CO.

AHEAD OF ANYTHING IN USE.

Extract from a letter written by the manager of the Export Lumber Company's Mills, at Bay Mills, Michigan, Hall & Buell, 148 Pearl Street, New York, Proprietors.

MESSRS. LONDON, BERRY & ORTON. December 29, 1884.

Gentlemen :—From our experience I am perfectly satisfied that for choice pine or valuable woods of any kind, the Band Saw Mill is beyond doubt ahead of anything in use. I can cut lumber just as cheaply on a Band Saw Mill, cutting 20 thousand per day, as I can in the most modern mill in Michigan, gang or circular; and if one wants quantity they must put more Band Mills in. Yours truly,

J. D. PERRY, Manager.

BEST MILL IN THE COUNTRY.

Office of G. S. & E. C. VAN VALKENBURG,

MESSRS. LONDON, BERRY & ORTON. South Nashville, Tenn., April 8, 1885.

Gentlemen :—Our old No. 9 has been running all through this season without a bobble. All the mill has cost us is those wheels, and we only needed one of them. The original top guide wheel is O. K., and running yet. There is no doubt about your making the best mill in the country. We have seen several other makers.

Your last in regard to Band Mill No. 8 received and noticed; will decide what we will do in a few weeks, and let you hear.

Yours, etc., G. S. & E. C. VAN VALKENBURG.

SLABBING FOR A GANG MILL.

C. LAMB & SONS,
Manufacturers of Lumber, Lath and Shingles,
Clinton, Iowa, June 15, 1885.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—The Band Mill we have in operation is doing nicely. Handled 200 logs Saturday. They were, of course, not very large, but it is the largest number of logs we have handled in any one day yet. We sawed quite a number entirely with the band saw, and some of them we turned over to the gang. We have now no doubt as to the success of the Band Saw Mills. Yours truly,

A. LAMB, Secretary.

Report of the cut of Band Mill through June, July and up to August 21, 1885.

June	Logs	Scale Feet	July	Logs	Scale Feet	Aug.	Logs	Scale Feet
. .	. .	. . .	1	143	50891	. .	. .	. . .
. .	. .	. . .	2	140	46908	. .	. .	. . .
. .	. .	. . .	3	138	49521	. .	. .	. . .
. .	. .	. . .	6	120	49806	. .	. .	. . .
. .	. .	. . .	7	122	56511	. .	. .	. . .
. .		. . .	8	131	50512	. .	. .	. . .
. .	. .	. . .	9	131	49064	. .	. .	. . .
. .	. .	. . .	10	150	52275	. .	. .	. . .
9	146	47647	12	149	51512	. .	. .	. . .
10	140	47569	13	150	46674	3	131	58180
11	170	53414	14	162	52747	4	160	64335
12	164	59623	15	100	50000	5	151	56065
15	200	55990	16	100	40520	6	142	62576
16	175	59650	17	128	51562	7	119	58054
17	75	27050	18	111	49146	8	*60	29544†
18	177	62758	20	149	48600	10	132	68744
19	142	50000	21	110	50356	11	121	55811
20	152	49500	22	139	53588	12	158	63516
22	152	48182	23	129	51612	13	188	57258
23	174	44546	24	143	53216	14	175	52039
24	214	46246	25	113	58072	15	125	47468
25	183	46007	27	119	60712	17	75	27018‡
26	159	48080	28	129	52350	18	138	51010
27	169	48781	29	148	55447	19	102	45692
29	154	47410	30	140	53361	20	147	55700
30	147	51516	31	124	51662	21	114	50354

*Grant. †One-half day to Grant's funeral. ‡One-half day to attend funeral.

This represents the work of one of our No. 9 Band Mills slabbing for a No. 17 Gauge Gang Mill.

SHOWING AMOUNT OVER SCALE.

October 19, 1885.

Band Saw at mill "C" cut, Friday, Oct. 16th, 59 logs, 31,323 feet; Saturday, Oct. 17th, 66 logs, 31,139 feet, full log scale; or, Oct. 16th, 39,153 feet; Oct. 17th, 38,823 feet. Lumber cut into 1¼′′ and 2′, 11 hours per day.

November 7, 1885.

Our Band Saw in our mill "B" cut as follows:

Date, Oct.	No. logs canted for shingles	No. logs cut into lumber	No. logs canted for gang	Total logs handled	Total log Scale. Feet. All logs cut	Feet of lumber cut	Cut of Shingle and gang cants	Total cut of saw
28	12	40	124	176	61,100	24,600	4,080	28,680
29	12	39	134	185	62,610	24,650	4,380	29,030
30	21	47	137	205	69 628	25,463	4,818	30,281
31	18	35	139	192	63,728	26,794	4.342	31,136
Total for 4 Days.	63	161	534	758	257,066	101,507	17,620	119,127
Daily average.	15¾	40¼	133½	189½	64,266	25,377	4,405	29,782

November 16, 1885.

We cut with one of your No. 9 Band Mills, two days, 11 hours each:—

Nov. 12th, 43 logs, scaling 25,954 feet, cutting 33,434 feet; Nov. 13th, 42 logs, scaling 23,278 feet, cutting 30,235 feet. Eighty per cent. we cut to one-inch lumber. This was with the Direct Attachment.

C. LAMB & SONS.

WANTS MORE MILLS.

We have been permitted to use an extract from a letter written by C. Lamb & Sons to parties inquiring about the performance of their mills.

Clinton, Iowa, January 8, 1886.

In answer to yours would say, we used all last season two London, Berry & Orton Band Mills, and liked them so well that we are putting in two more of them this season. Taking their mills altogether, we think them better than any other make, and we have investigated them all thoroughly.

A GOOD SHOWING.

WHITE, LENTZ & WHITE,
58 West Third Street, and Foot of Walnut Street,

Williamsport, Pa., August 27, 1885.

MESSRS. LONDON, BERRY & ORTON.

Gents:—We enclose you an account of the amount cut daily so far this month on the Band Mill; it is hardly a fair showing, as we have been running mostly on inch boards during this month. We run ten hours per day, except on Saturdays, when we only make nine hours. We are well pleased with the work of the mill, and since we have become familiar with dressing the saws, everything works satisfactorily.

Yours respectfully,

WHITE, LENTZ & WHITE.

——AUGUST.——		
1		16,201 ft.
3	One-half day . . .	9,447 "
4		18,146 "
5		22,401 "
6		22,614 "
7		26,540 "
8	Mill shut down . .	
10		24,958 "
11		25,313 "
12	About ⅔ day . . .	16,823 "
13		22,170 "
14		22,616 "
15		18,683 "
17		19,714 "
18	Mill shut down . .	
19		22,428 "
20		21,193 "
21		20,477 "
22	One-half day . . .	10,277 "

Where we have noted mill shut down, or one-half day, our whole mill was shut down. All the above sawing is white pine.

These parties have since put in a second mill.

WELL PLEASED AND TAKES ANOTHER.

CLEVELAND SAW MILL AND LUMBER CO.,
R. K. Hawley, Pres't.

MESSRS. LONDON BERRY & ORTON. Cleveland, O., December 15, 1885.

Gentlemen:—We have one of your No. 9 Band Mills, and are so well pleased with it that we have decided to put in another mill this winter of the same kind.

Yours, R. K. HAWLEY, President.

ADDING TO OUR PROFITS.

Cincinnati, September 18, 1882.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen :—In reply to yours we have nothing more to say in regard to your Band Log Saw Mill, except to confirm our previous letter of two years ago. We are well pleased with the mill, and every day it becomes more valuable to us. As the forests of our country are in proportion depleted, the price of timber increases, and the value of a mill that will save the (or a part of) saw kerf is correspondingly increased, and your band saw mill is accomplishing that result for us, thus adding to our profits material that formerly went into sawdust. We wish you success and many orders.

Yours respectfully, THE E. D. ALBRO CO.,
by E. D. ALBRO, President.

CAPACITY ALMOST UNLIMITED.

THE TENNESSEE LUMBER CO.,
Manufacturers of Hard Wood Lumber.
Cincinnati, O., August 22, 1885.

MESSRS. LONDON, BERRY & ORTON, Philadelphia, Pa.

Gentlemen:—We have been running the two Log Band Saw Mills of your make steadily this season since April 1, and we are well pleased with the results.

The Large Mill No. 9, 8-ft. wheel with engine attached, we consider the best and nearest to perfection; the capacity of this mill is almost unlimited, and we find it much easier to handle and operate. Owing to the engine attached to the shaft, we avoid all slipping of belts and lost motion. The carriage is strong, and all the parts heavy and serviceable. The setting-out arrangement is perfect, and the dogs are the best we have ever seen. The under dog fills the want by holding the log firm and free from springing. We have never timed a day's sawing, and cannot say how many feet we can saw daily, but our average to date on the No. 9 Mill, shows from 12 to 15 thousand feet per day, of miscellaneous timber, walnut, oak, ash and poplar. We shall be pleased to show the mill to any one you may send to examine it.

Yours respectfully, THE TENNESSEE LUMBER CO.,
by E. D. ALBRO, President.

SUPERINTENDENT'S REPORT.

This is the performance of a combined mill and engine, with 10-inch cylinder. We are now making the cylinder 12-inches bore, giving greatly increased capacity. L. B. & O.

The Tennessee Lumber Co.,
MANUFACTURERS OF
HARD WOOD LUMBER.
Car Builders', Street Car and Furniture Manufacturers' Stock.
871 to 889 West Sixth Street.

Cincinnati, Ohio, June 4, 1886.

LONDON, BERRY & ORTON, Philadelphia, Pa.

I will enclose a statement of the amount of logs and lumber the "Big 9" cut in the month of May, which I think is very good for the number of logs and the size of them. This lumber was all poplar; some of the logs were 50 inches in diameter; the smallest was 28 inches.

May.	No. of Logs.	Log Measure.		May.	No. of Logs.	Log Measure.	
1	32	18,181		19	40	21,123	
3	26	19,824		20	45	19,648	
6	33	21,562		21	31	19,532	
7	37	12,622	⅔ day.	22	28	16,678	
9	37	12,839	⅔ day.	24	42	23,328	
10	30	17,059	⅔ day.	25	42	20,743	
11	39	21,322		26	40	19,280	
12	29	18,831		27	42	20,014	
13	25	9,393	½ day.	28	41	20,826	
14	44	24,195		29	42	18,682	
15	48	11,618	½ day.	31	24	11,509	½ day.
Total, ...					797	398,809	

Yours truly,
J. J. BALDWIN, Supt. and Foreman The Tennessee Lumber Co.

Please note that this is Log Measure. The actual amount of boards will range from 12 to 20 per cent. more.

Average for 19 1-2 days, 20,451.

Patent Band Saw Wheels.

Telegraph Cipher, "BLOTCH."

LOWER WHEEL



Telegraph Cipher, "BLOOMING."

UPPER WHEEL



Band Saw Wheels are, no doubt, a very important factor in the construction of Band Mills. Owing to the heavy strains to which they are subject, both in driving and maintaining the proper tension of the saw; the high velocity of their periphery; the long-continued action that is rightfully expected from them; the expansion and contraction that is constantly going on, owing to changes of the temperature; too great care cannot be taken in their construction.

Construction.—Hub is made of cast-iron, spokes of best refined wrought-iron turned from hub to the rim so as to keep the wheel in perfect balance at equal and all distances from its centre.

Lightness of Upper Wheel.—The rim of the upper wheel is made of steel that the greatest strength may be attained with the least weight. As this wheel is always driven and controlled by the lower one through the agency of the saw, the advantage of making it as light as is consistent with strength required will be readily understood.

Weight of Lower Wheel.—The rim of the lower wheel is about three times as heavy as that of the upper, so that when the saw meets with a sudden resistance (as when entering the log) it acts as a fly wheel, and makes it impossible for the upper or light wheel to "overrun" the lower or driving wheel, when said lower wheel is *properly belted.*

We have found this much better in practice than putting "retarders" or other claptrap resistances on the upper wheel.

Expansion and Contraction.—The iron rims are covered with segments of hard wood bolted on with through bolts, between each segment is fastened a soft piece of white pine from ¼ to ½ inch thick, this prevents the wood rim from getting bound or too long for the iron tire. To illustrate, we take a wheel eight feet diameter 25.1328 feet circumference. For an increase of 100 degrees in temperature we get nearly ¼ inch difference in circumference; this is provided for by using the soft material between each segment.

Rubber Cover.—The wood is then covered with rubber laid on canvas specially prepared for us and always kept in stock.

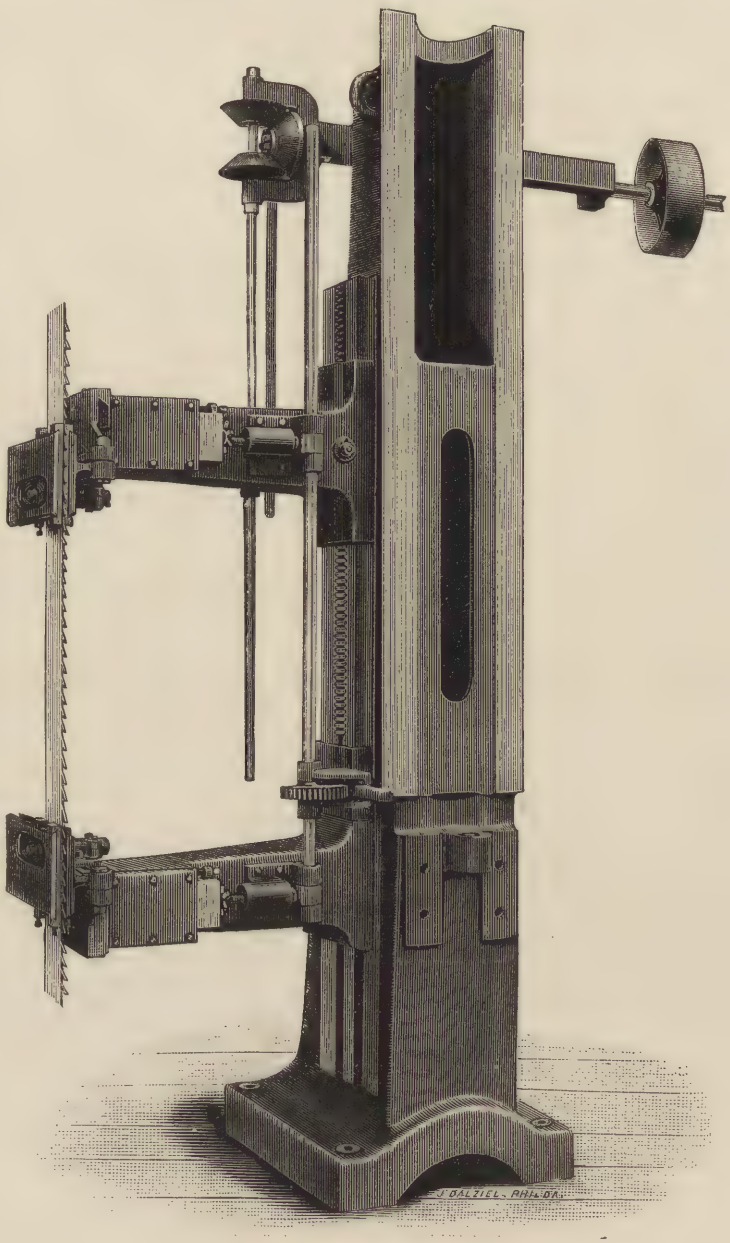
The Wheel.—We are constantly receiving inquiries and filling orders for wheels on mills of other makers that have given out after short service. We believe this to be the best wheel on earth.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

The cut represents the column of our No. 9 Mill, with guides, deflector, and means of raising or lowering the upper guide by power, the arrangements of which we believe to be as perfect in all its parts as mechanical skill, assisted by long experience, can make them.

The column is a massive piece of about one and one-half tons weight, planed true on its face, side and bottom. The face, that it may receive the saddle carrying the upper wheel with a long and broad base, thereby assuring a steady motion to the wheel, which must be attained to get the best results. The side, that both upper and lower guide-arms may be mounted on the same plane; and, while the upper one can be freely moved up or down to keep close to the log, the lower one can be set higher or lower, so as to have the desired clearance below the carriage-beam, without danger of disturbing or throwing either arm out of its proper line. The bottom, that it will make a good and substantial joint when mounted on the base.



The guides are of our latest and most improved pattern, and will pass the knees on carriage and leave the last board one inch thick. The sides of the saw are supported with pieces of steel that are movable, so that the saw is always held at its back edge and under the teeth. A hard cast steel roller, mounted on a steel shaft in good substantial bearings, supports the back. The whole guide is swiveled at or near the points of the saw-teeth, so that when the back edge is moved to line the saw with the carriage, the cutting line is not disturbed. It is also fitted with all the necessary adjustments to make it the most complete guide in existence.

Patent Deflector. This device, which is so clearly shown in cut as to need no description, is attached to the reversing lever or separate treadle as desired, so that when the carriage is making its backward movement, the saw is deflected from the log about one-fourth of an inch, rendering it impossible to throw the saw from the wheels or deface the lumber.

Carriages for Band Saw Mills.

In order to develop the full efficiency of the Band Saw Mill, it is necessary that the carriage and all its attachments should be of the highest class. The framework should be made of heavy timbers, well braced and fully protected at all exposed points; the rails and trucks should be heavy and solid to resist the shock of large logs; and the mechanism for holding and setting the log should possess, in the highest degree, the essential points of firmness and accuracy.

Keeping these points in view, we have designed the following carriages and set works, and have added improvement after improvement to them, until we feel confident in offering them as pre-eminently suited for use with our Band Saw Mills. The general appearance of the carriages is well shown in the accompanying illustrations, and the following description will give an idea of the superiority of their construction:—

The carriage proper is built of heavy yellow-pine timbers, framed and bolted together and shod at the corners with wrought-angle iron, effectually preventing all bruising of the timbers. The rails on which the carriage runs are of steel, the top being planed to a trapezoidal shape, giving a much better bearing for the trucks than the ordinary "V" rail. The trucks are of two styles, being made either independently of each other, or being fixed to axles running across the carriage; either form being used as may be desired. The trucks on the side towards the saw line are flanged on both sides and turned to fit the rail, while the trucks on the back side of the carriage are flanged on the inside only, in order to meet the shock when loading heavy logs.

The head-blocks are especially well made, being each made of two heavy wrought-iron "I" beams, bolted solidly together and planed to receive the knees. The knees receive their motion from steel pinions placed between the beams of the head-blocks, and gearing into steel racks on the knees. These pinions and racks are machine-cut and are fitted closely, so that all lost motion is avoided. Each knee has an independent movement in addition to the general movement, in order to permit of the handling of taper logs.

The setting mechanism is constructed of a combination of ratchet wheels, pawls and toggle-levers, by which a very accurate and powerful motion is obtained. The peculiar action of the toggle-links causes the log to move slowly when approaching the end of the lever-motion, and effectually prevents any tendency to overthrow, no matter how rapid the action of the setter may be. The ratchet-wheels are faced with steel, and are machine-cut, thus insuring accuracy, and the pawls are also of steel. The indexing of the set-works is graduated accurately by sixteenths of an inch, and the longest throw of the set-lever gives a motion of 2¼ inches, and the amount of throw can be promptly adjusted to any required amount.

The knees are provided with a power-receding attachment, by means of which they can be either receded or advanced to any required position; and a hand-adjustment is also provided.

When so ordered the knees are arranged to be receded by means of springs, as shown in the illustration.

These head-blocks are made to open 40, 44, 48 and 54 inches from the saw line, and the carriages are made to suit the various widths. The cuts, page 175, show the amount of space occupied by the various widths of carriages—the space ranging from 8 feet 11 inches for the 40-inch head-block, to 10 feet 1 inch for the 54-inch head-block.

Where the amount of space for the carriage is limited, we have designed a form of screw set-works, which is well suited for the purpose. The head-blocks for these screw carriages are made in the same substantial manner as the rack and pinion head-blocks, and when the space is limited their use is recommended.

For cut see pages 170 and 175.

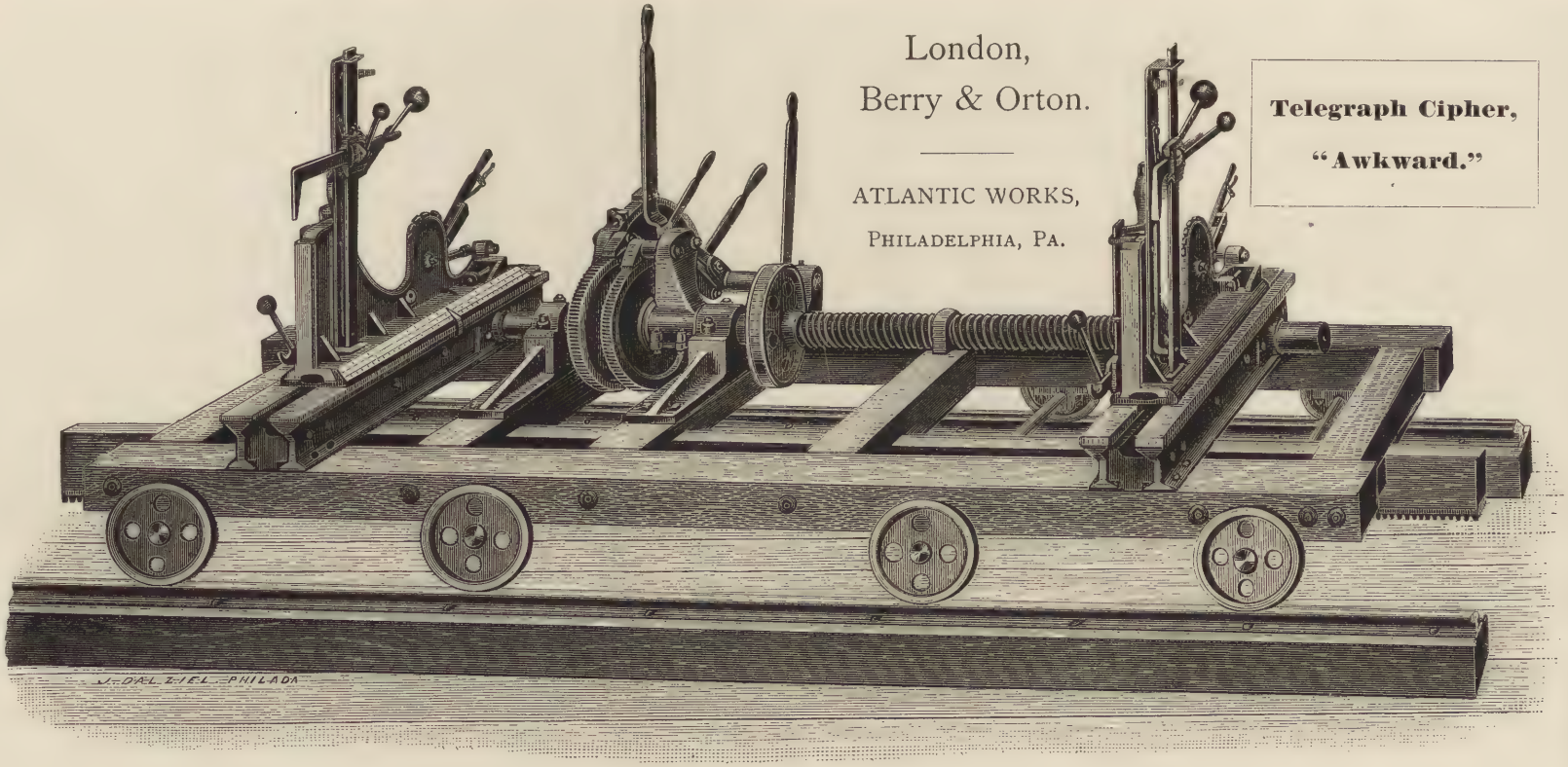
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

London,
Berry & Orton.

ATLANTIC WORKS,
PHILADELPHIA, PA.

Telegraph Cipher,
"Awkward."



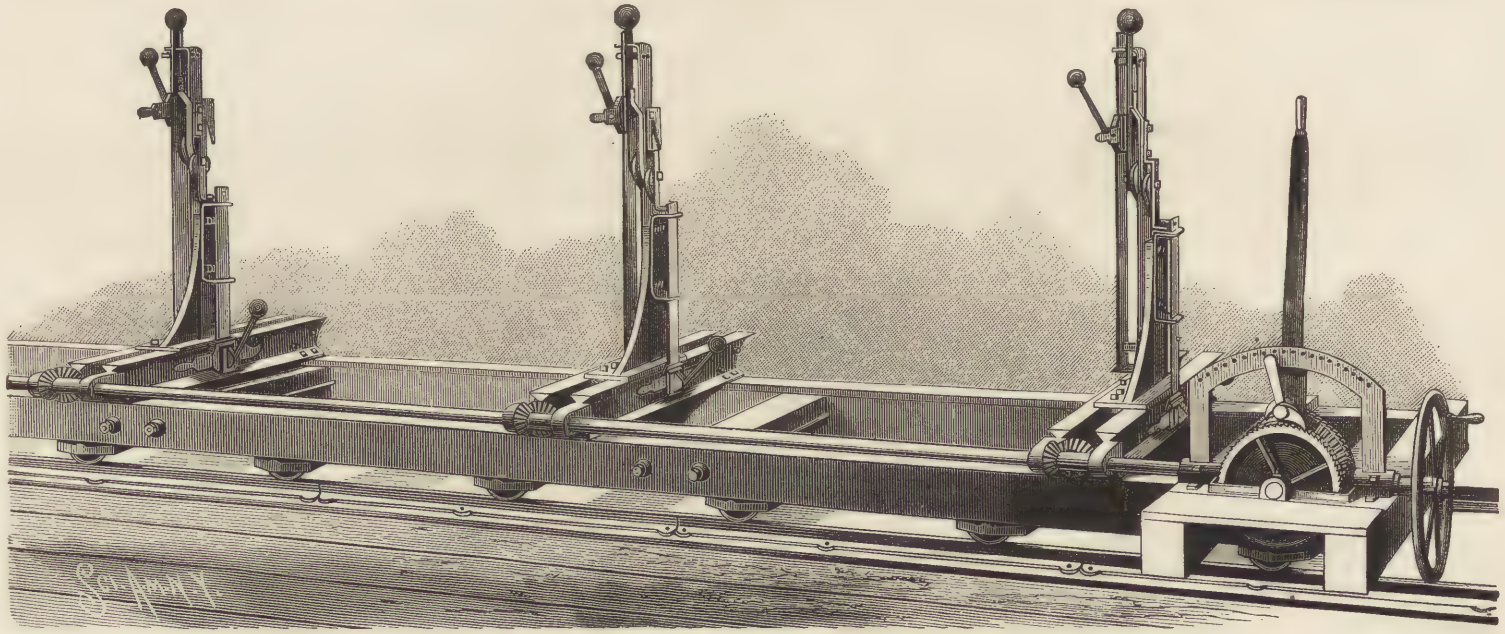
Carriage with the Fractional Rack and Pinion Head-Blocks.

"The Carriage is strong, and all the parts heavy and serviceable. The setting-out arrangement is perfect, and the dogs are the best we have ever seen." Tennessee Lumber Co., E. D. ALBRO, President. (See page 165.)

London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.

Telegraph Cipher,
"Bantam."

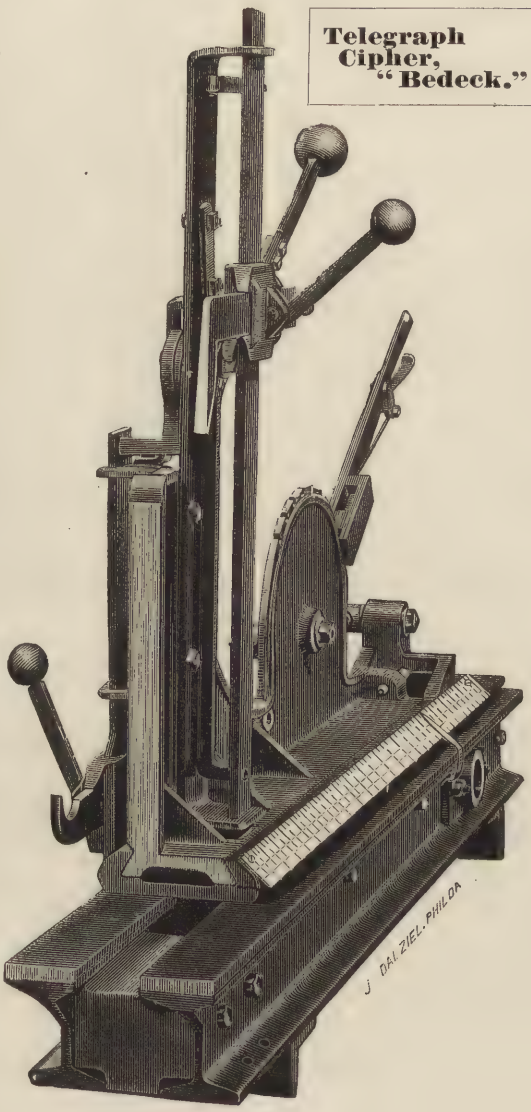


Carriages with the Fractional Screw Head-Blocks.

This Carriage recommends itself where the amount of space for the carriage is limited, as the knees never extend back further than the set works. (See pages 168 and 175.)

Improved Rack and Pinion Head-Block.

Telegraph Cipher, "Bedeck."



The above cut represents our latest improved rack and pinion head-block, with taper attachment. It is built in five sizes, 40, 44, 48, 56, and 60 inch. Where there is room, it will in all cases be recommended.

Construction.—The beam is constructed from two heavy wrought-iron **I** beams, thoroughly bolted together, with strong cast-iron distance pieces between, giving ample room for all bark and dust to pass freely through. Beams are faced with steel, so as to be replaced when worn, if so specified, and is recommended in all cases where the work is severe.

Rack and pinion.—Are made of forged cast-steel and machine cut and of sufficient width to secure a minimum of wear. The rack is thoroughly bolted to a heavy and substantial base of cast-iron, on which is mounted the independent knee, entirely covering both rack and pinion, so that dust collecting in either is simply impossible.

Independent knee.—The base and independent knee are connected by a link; this link is arranged with right and left hand thread so it can be shortened or lengethened, throwing all knees into perfect line without moving the racks or throwing the set shaft out of line.

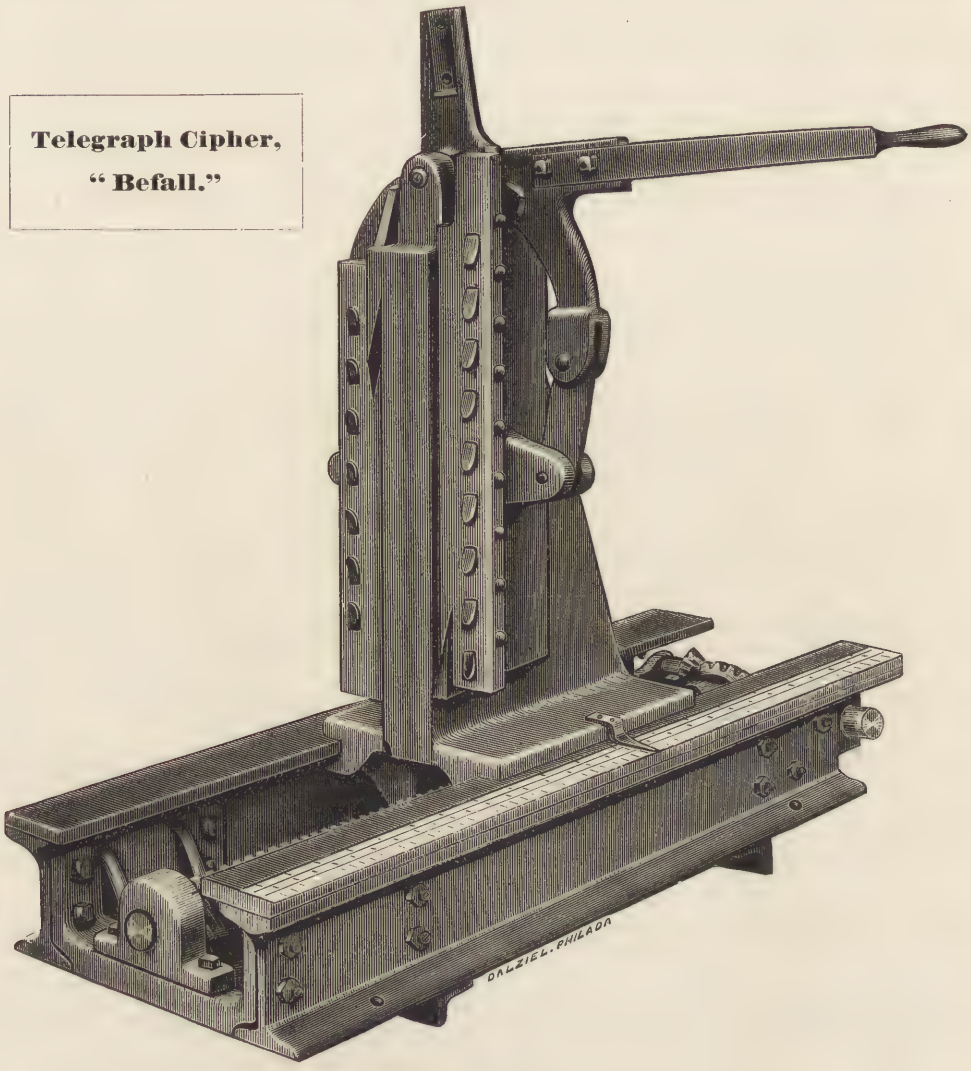
Dogs.—Any make of dogs can be used.

Prices.—Prices will be quoted with or without dogs.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Telegraph Cipher,
"Befall."



Weight, 1,700 pounds.

Heavy Screw Head-Blocks for Cants.

After a careful and personal observation of the wants of the Pacific Coast in manufacturing the large red wood of California, the pine, spruce and cedar of Oregon and Washington Territory, the best way and manner of manufacturing to meet their market, and the severe service expected from head-blocks, we have constructed the above, which for the special purpose of holding cants from springing when piled 30″ or less in height has no equal.

Construction.—The beam is formed of two 9″ heavy wrought-iron **I** beams, faced with the best forged cast-steel, one inch thick, five inches wide, thoroughly bolted together with cast-iron distance pieces between.

Screws.—Each block is fitted with one steel screw 3″ in diameter, quadruple thread 4″ pitch, with solid forged collar to take the end thrust.

Gears.—Are made of cast-steel, keyed to screws and steel set shaft.

Knees.—Are 30″ high, 20″ × 12″ on the base. Cast with rectangular cored section and weights about four hundred and fifty pounds each. To each side, with dovetails, planed true and set at opposite angles, so that one will advance in its upward and the other in its downward movement, are fitted the dog holders, which advance or retreat as the handle of lever is moved up or down.

Dogs.—Are made from bars of cast-steel ¾″ × ⅜″ and can be readily taken out or changed in position by means of the set screw shown on the side of holder.

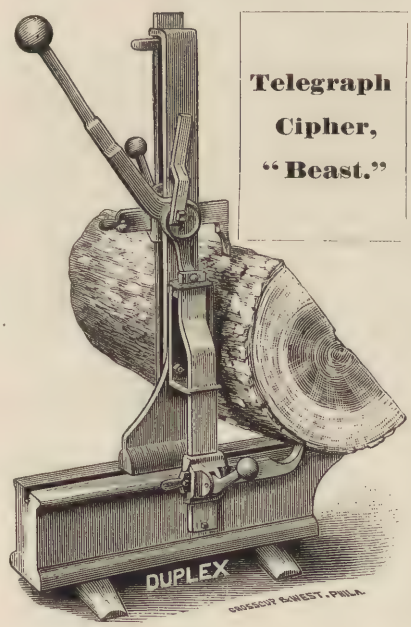
Set works used in connection with this head-block are the same as those used on our fractional rack and pinion carriage, and shown on page 169 of this catalogue.

Index.—A rule is attached to the side of beams showing at all times the distance between face of knee and saw line.

Remarks.—When constructed with roll on the top of a low knee, and the beams long enough for large logs, this block, is the standard block of the Pacific Coast.

Prices will be quoted on any size on application.

The Knight Duplex Mill Dog.



Telegraph Cipher, "Beast."

The cut represents the Knight Duplex Mill Dog, which will be used on all of our head-blocks unless otherwise specified.

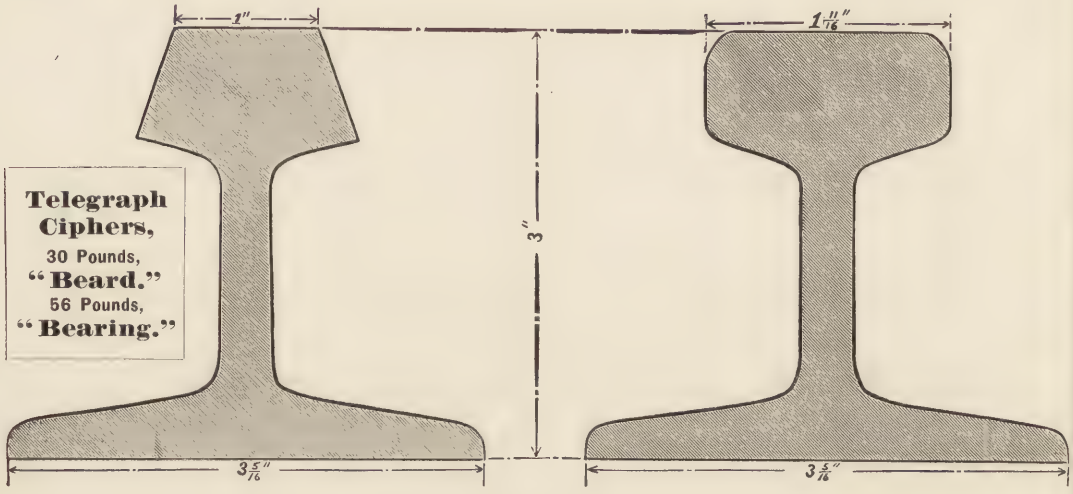
Construction.—It is built mostly of wrought-iron and steel, and is so simple and easily repaired as to be entirely under the control of the operator.

Dogs.—One each above and below the log can be extended as desired from the knee, and are both attached to one eccentric in such a manner that when the lever is brought down both are advanced into the log, making them specially adapted to holding quartered stock.

Holding.—No matter how hard or frozen the log, while being sawed, may be held in any desired position.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



Steel Track.

The Above Cut represents a sectional view of track, which after severe trials has proved to be superior to all other forms, and has generally been adopted by all railroads in America. When planed true and properly put down in long lengths, it makes the finest track for saw-mill carriages ever produced.

Setting. Set both track rails level, as both **V** and flat track are the same height.

Cast-Iron Track. We have several patterns, and will be pleased to quote the lowest prices; but as there is so little difference in the first cost, we would in all cases advise the steel **T** rail.

Prices Quoted on any weight Track.

Carriage Wheels are furnished either of steel or cast-iron, from four inches to sixteen inches in diameter.

Bearings. Self-oiling, that oil from packing boxes on the under side, are used on all carriage trucks or axles.

Live Rolls will be furnished turned and balanced, of any diameter or length, driven either with gears or chain as desired.

Idler Rolls furnished in any size, with or without wooden frame.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

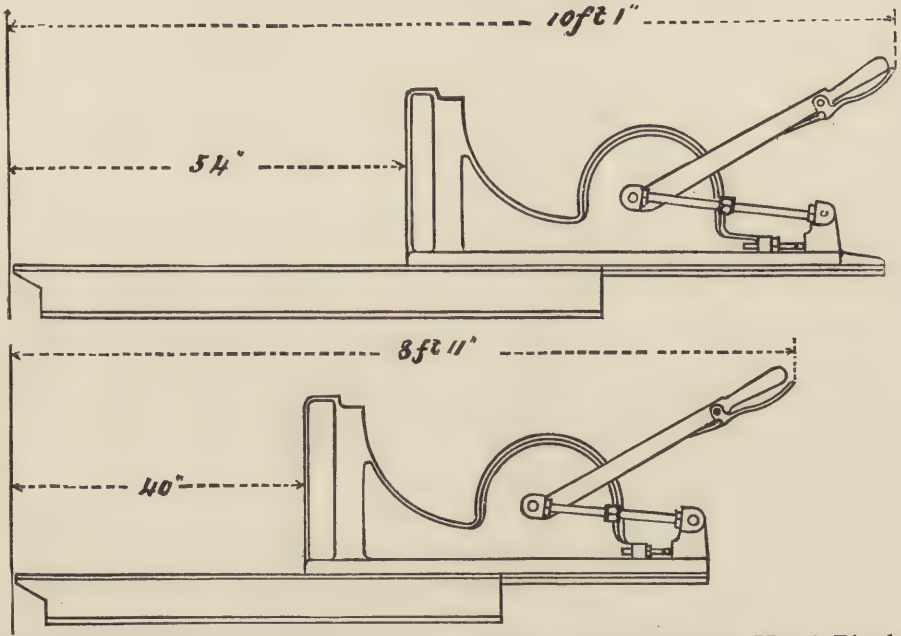


Diagram showing extreme width required for Rack and Pinion Head Blocks.
The 44 inch Block occupies 9 feet 3 inches, and the 48 inch occupies 9 feet 7 inches.

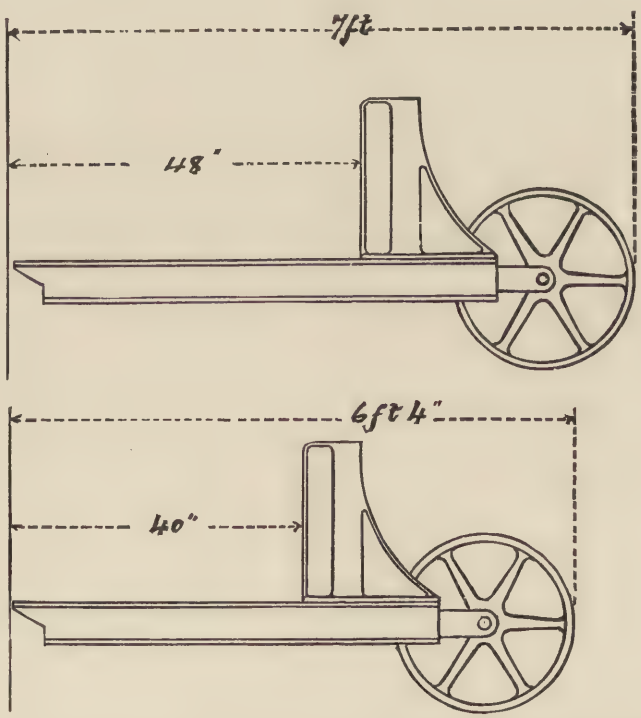
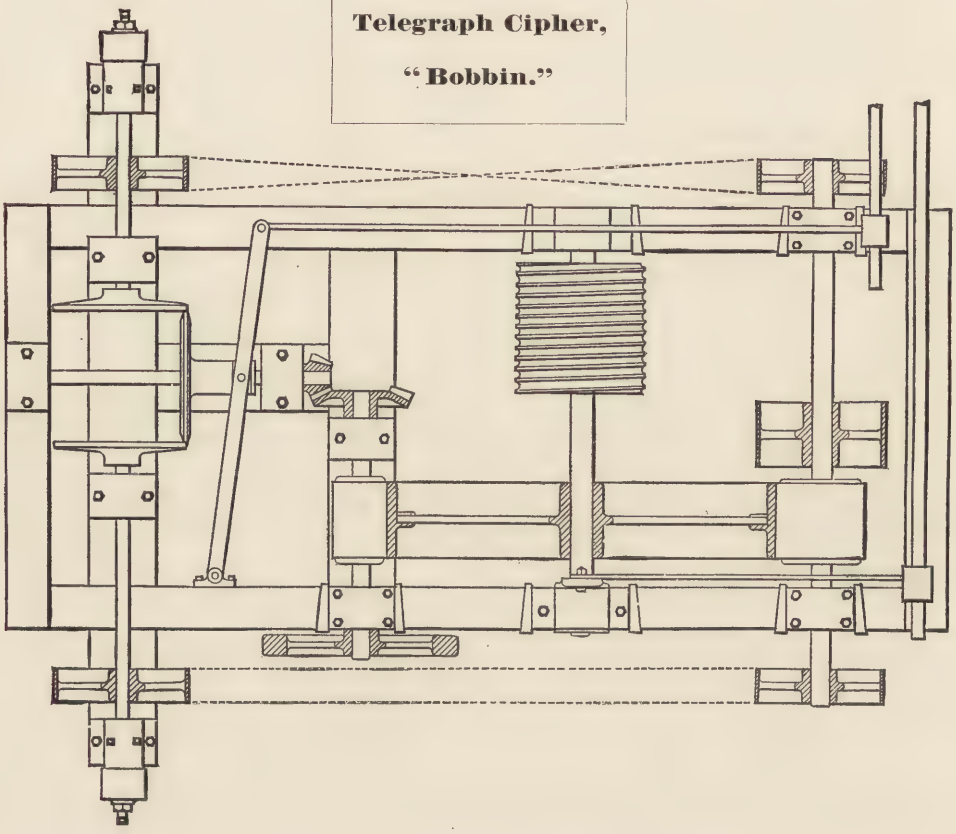


Diagram showing extreme width required for Screw Head Blocks.
The 44 inch Head Block requires 6 feet 8 inches.

Duplex Variable Feed.

Telegraph Cipher,

"Bobbin."



The engraving shown above illustrates our latest improved "Duplex Variable Friction Feed Works," designed for handling the heaviest carriages with ease and rapidity.

The advantages claimed are: A positive change of feed at the will of the sawyer; a strong, heavy, and substantial feed works, away from the band mill, where it can be easily got at for adjustment and repairs; a positive knowledge of the result when the saw enters the log, as the feed is the same as when the last cut was made. The value of this knowledge is inestimable, for when a saw is overcrowded, as it enters the log, it is likely to be overtaxed, and before the carriage can be checked, the lumber is spoiled and the saw damaged.

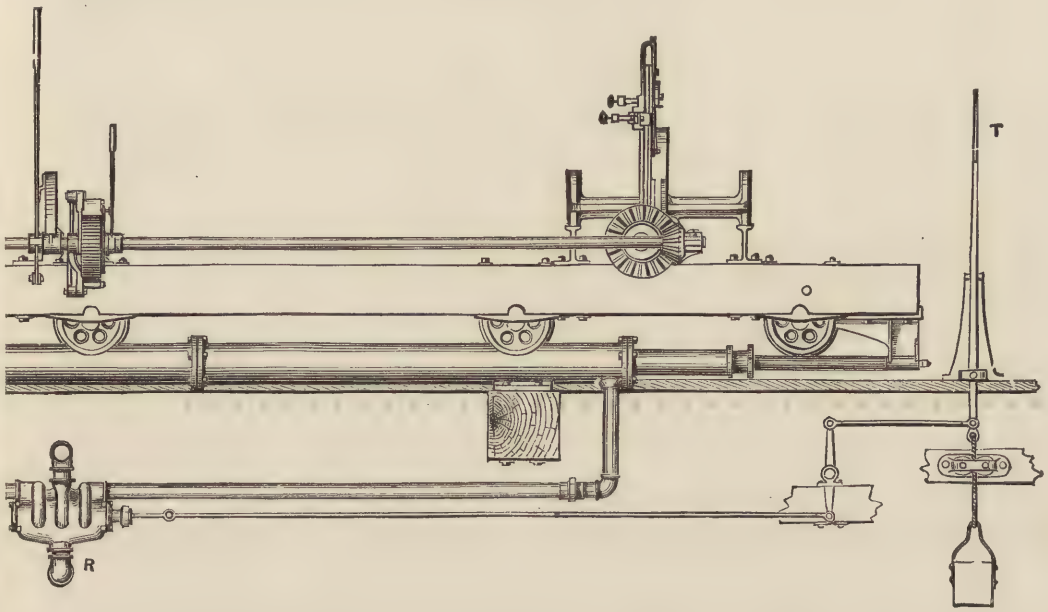
By close observation during the season past, we find this so objectionable that we have been forced to devise some means to remedy the defect. We think the "Duplex Variable Friction Feed Works" complete, and will no doubt be appreciated by all parties that have had experience with band saw-mills.

Construction.—Full details will be given on application.

Weight, about 8,000 pounds.

PRESCOTT'S PATENT DIRECT ACTING STEAM FEED.

This feed for saw mill carriages is too well known to need an extended description. We furnish cylinders of any length and of any diameter, with full and complete directions for setting up.



For standard size, which has cylinder 7⅛ inches diameter, prices are as follows:

Feed Works Requiring Cylinder—		Feed Works Requiring Cylinder—	
18 feet in length	$500	50 feet in length,	$655
20 " " "	510	52 " " "	660
22 " " "	520	54 " " "	665
24 " " "	530	56 " " "	670
26 " " "	540	58 " " "	675
28 " " "	550	60 " " "	680
30 " " "	560	62 " " "	685
32 " " "	570	64 " " "	690
34 " " "	580	66 " " "	695
36 " " "	590	68 " " "	700
38 " " "	600	70 " " "	705
40 " " "	610	72 " " "	710
42 " " "	620	74 " " "	715
44 " " "	630	76 " " "	720
46 " " "	640	78 " " "	725
48 " " "	650	80 " " "	730

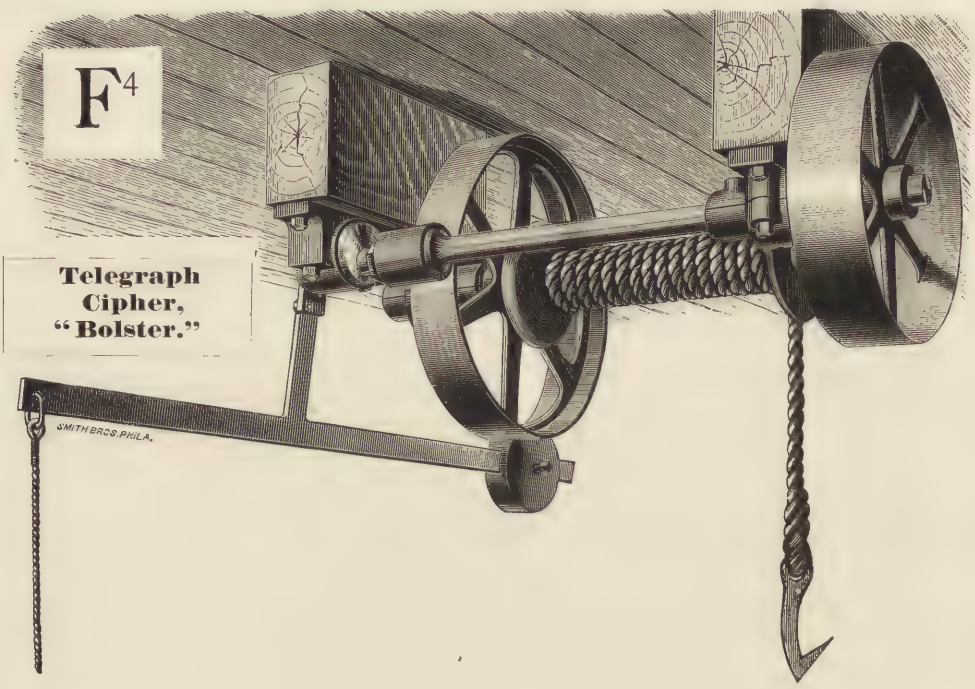
Steam Feeds having cylinders larger in diameter than standard size, will be furnished as follows:

Feed Works having 7⅝ inch Cylinder	5 per cent. advance on Standard list.
" " " 8 " "	10 " " "
" " " 8½ " "	15 " " "
" " " 9 " "	20 " " "
" " " 9½ " "	25 " " "

The following size is suitable for light Resawing Mills:

Feed Works having 6½ inch Cylinder . . 10 per cent. discount from Standard list.

When ordering, state longest log to be sawed, whether right or left hand mill, and send sketch showing which side live steam comes in and exhaust goes out.



Friction Log Turner.

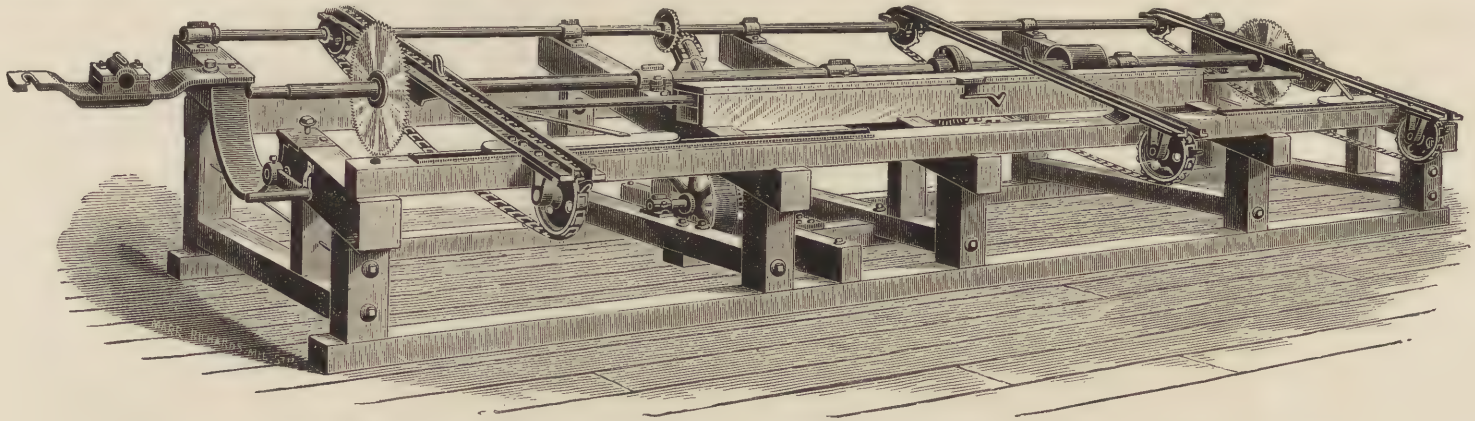
THE engraving represents our Friction Log Turner as it is set up in the mill. It is designed to be placed above the carriage of a Band Saw Mill, the windlass being set parallel with the carriage so that the hook will hang down about a foot from the saw line. A light pull on the line at the end of the lever throws the friction wheels into contact, and when the line is released, the counter-weight throws them out at once. There are no gears to rattle or break, and the apparatus is convenient and efficient. The driving pulley is 30 inches diameter, 7 inches face, and should make about 400 revolutions per minute.

Every saw mill should be provided with our Friction Log Turner. Simple, effective, not easy to get out of repair.

When so ordered this machine is made to lower by power.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



London, Berry & Orton, Improved Lumber Trimmer.

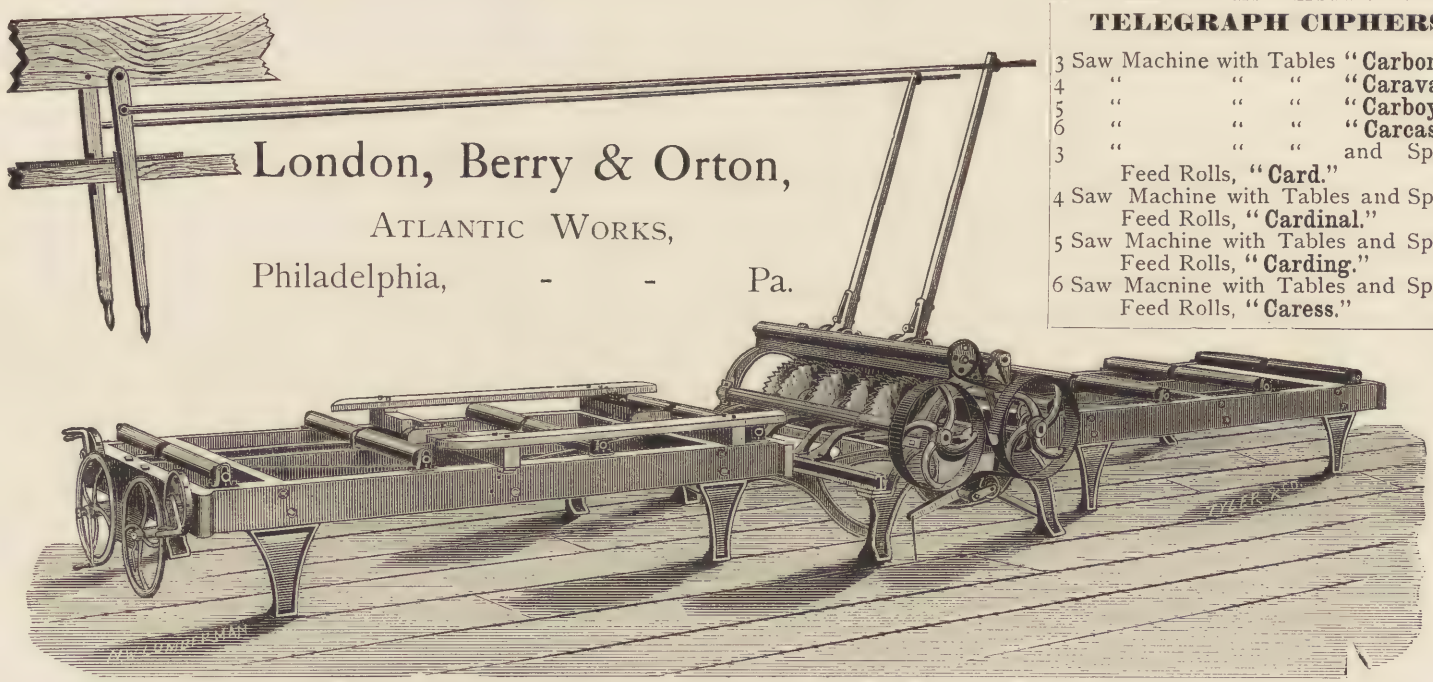
This machine, with the improvements lately placed upon it, has secured the approbation of mill men all through the country.

The saws slide four feet on the arbors, and are both moved by one crank. One turn of the crank changes the distance between saws two feet. Attached to the crank is a spring that fits into notches, holding the saws at correct distances.

This machine is furnished with our Patent Swing Bridgetree and Arbor Box. The Arbor Box is pivoted at one end, and the Bridgetree can be swung far enough round to leave the arbor clear for the removal of the saws through the arch in the frame. Saws can be changed very quickly.

Three sizes of this Trimmer are made; No. 1 trims from 8 to 16 feet. No. 2 trims from 10 to 18 feet. No. 3 trims both ends from 12 to 20 feet, and one end from 6 to 12 feet. No. 3 has three transfer chains. Either size will trim from 75,000 to 95,000 feet per day.

The driving pulley is 8 inches in diameter, 10 inches face. Speed of the arbor 1,000 revolutions per minute. Prices and Sizes furnished on application.



London, Berry & Orton,

ATLANTIC WORKS,

Philadelphia, - - Pa.

TELEGRAPH CIPHERS,

3 Saw Machine with Tables "**Carbon.**"
4 " " " "**Caravan.**"
5 " " " "**Carboy.**"
6 " " " "**Carcass.**"
3 " " " and Spurred Feed Rolls, "**Card.**"
4 Saw Machine with Tables and Spurred Feed Rolls, "**Cardinal.**"
5 Saw Machine with Tables and Spurred Feed Rolls, "**Carding.**"
6 Saw Macnine with Tables and Spurred Feed Rolls, "**Caress.**"

Double Five-Saw Gang-Edger, with Front and Back Tables, all Complete, with Patent Guides for Holding and Shifting Saws.

This Edger has been built especially to meet the demand for something **more durable, accurate and convenient** than anything heretofore brought into use for the purpose, and if we may judge from the praises awarded to it by thoroughly competent men who are using it, it is an entire success.

The Arbor, Feed Rolls and Press Rolls are placed in a heavy, independent cast-iron frame, having heavy cast-iron cross braces bolted to the sides, and braced in such a way as to make it impossible for the frames to spring or twist out of line, making all the running gear entirely independeut of the front and back tables and idle rolls.

The Saws are moved on the arbor by hand-wheels placed at the front end of the edger table, convenient to the operator, as shown in the cut, and so arranged that two saws can be locked together 4, 6, 8, 10, etc., inches apart, and so moved together, or moved separately, as the operator may wish.

There is a return roll on top of edger for unfinished lumber.

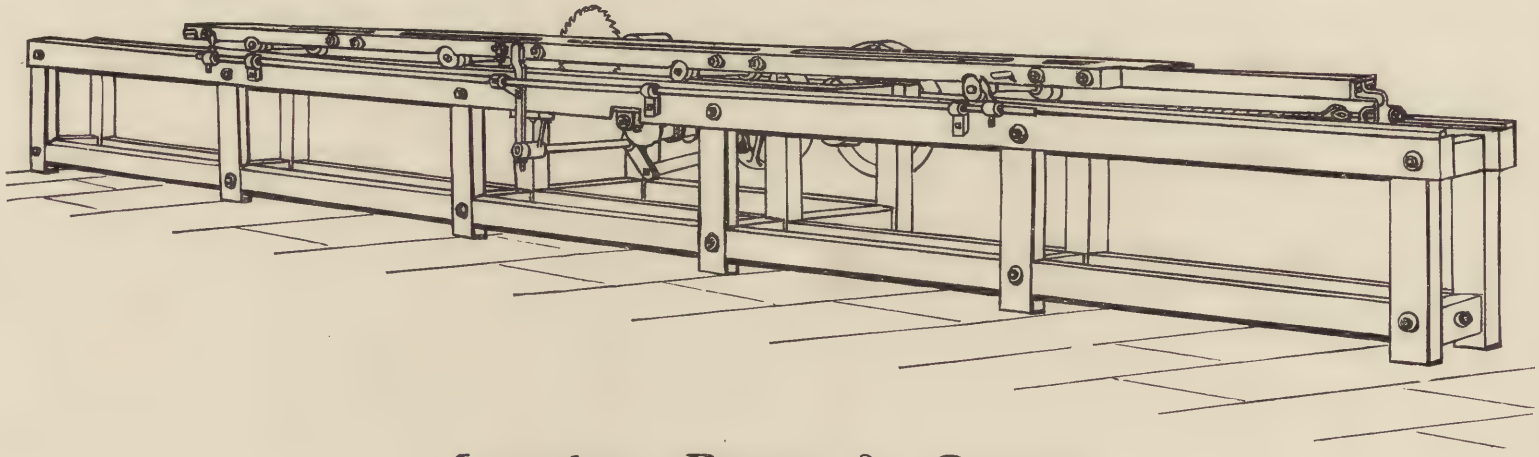
The operator standing in position to run lumber through the machine, the saws running towards him, if the belt pulley is at the right, it is a right-hand machine; if at the left, it is a left hand machine.

Power Feed Single Saw Edger.

The operator can send stock past the saw and return it to him without changing position or leaving his place. On valuable lumber when boards are edged tapering it has no equal.

Telegraph Ciphers,

16 ft. "Bombard."
20 ft. "Bombast."



London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.

Tools for the Saw Room.

IN calling your attention to our list of tools designed especially to be used in repairing and keeping Band Saw Blades in the very best order, so as to enable you to get the best quality of work in the shortest time, we feel that no apology is necessary, from the fact that to endeavor to get good results from Band Saw Mills without them is simply an impossibility. We make this assertion after a long, varied and tedious experience, extending over a period of not less than seventeen years, and feel confident that others with the same experience will justify us in so plainly speaking.

For Circular Mills, and all other mills, except the Band Mill, that have been devised for cutting lumber from the log, proper tools have been made, and are now on the market, for keeping the different saws in order. But when we endeavor to utilize them for the band saw, we find them very cumbersome and illy adapted to such use, owing to lightness of gauge and length of the band saw. For example, the swage or upset used on a thick saw, when applied to a tooth less than one-sixteenth of an inch in thickness, instead of upsetting, when the blows are applied to the swage, will bend or double up the tooth. Hence, we are obliged to resort to other appliances to produce the same result. Again, in gumming or cutting new teeth in the band saw, a full tooth should be made at one operation, and as the blade is light, a much lighter punch will do the work. The joining or brazing of the saws requires special tools. While many automatic emery wheel machines are well schemed for sharpening circular and other saws, we have not been able to find one that could well be adapted to band saws.

In conclusion, we would say that, after careful study of the nature of the machines required, we have spared neither time nor money in designing and manufacturing these machines, which we now beg to call your attention to on the following pages of this catalogue.

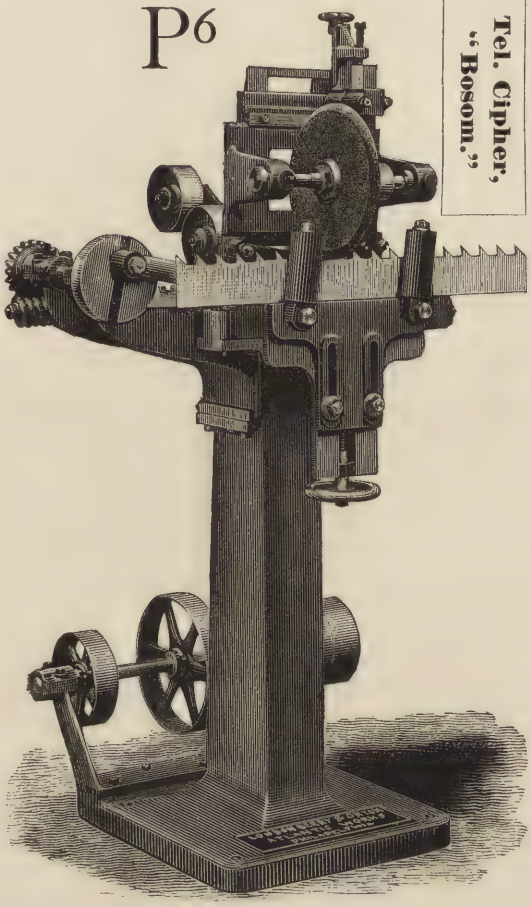
London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

Patent Automatic Saw Sharpening Machine.

P6

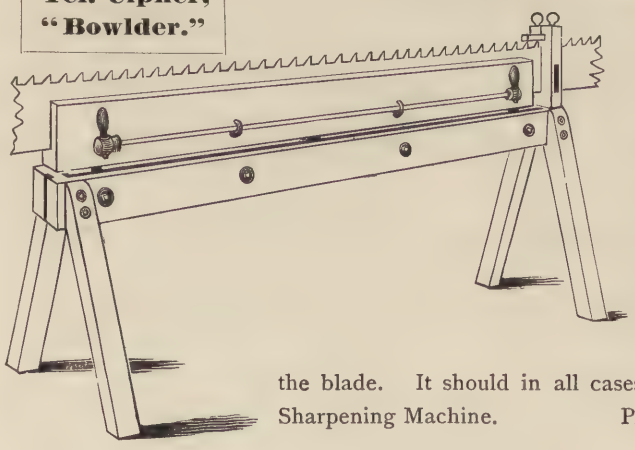
Tel. Cipher, "Bosom."



The Automatic Saw Sharpening Machine has been designed especially for the purpose of sharpening Band Saws, and will do all the work formerly done by hand filing. After it has been properly adjusted to the pitch and angle of tooth, it requires no attention while in operation; and after passing through the machine the saw is ready for use on the mill.

Price, . . $

Tel. Cipher, "Bowlder."

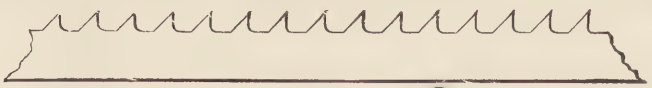


Saw Vise.

The Saw Vise shown in the cut is used in connection with the Automatic Sharpening Machine. It serves to assist in supporting the saw while being sharpened, and also to hold it firmly while touching up any portion of the blade. It should in all cases accompany the Automatic Sharpening Machine. Price, . $

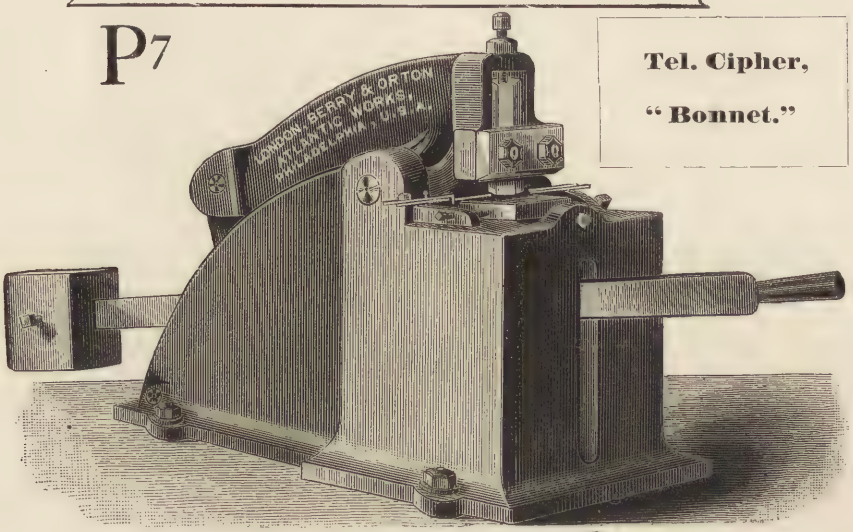
The London, Berry & Orton Special Band Saw File.

The peculiarity is that the edges are so cut that there is a safe edge which protects the bottom of the tooth when it is necessary to use a file. When an ordinary file is used the saw is *notched* and made liable to crack.



P7

Tel. Cipher,
"Bonnet."



Saw Gummer.

The Saw Gummer shown in the engraving is useful for gumming out the teeth so as to reduce the amount of work done by the Automatic Sharpening Machine, and it is powerful enough to punch out new teeth if necessary. The punch and die are so made that they can be kept in repair by grinding, and should last a long time.

Price, ... $

P10

Upsetting Machine.

Tel. Cipher,
"Borrow."

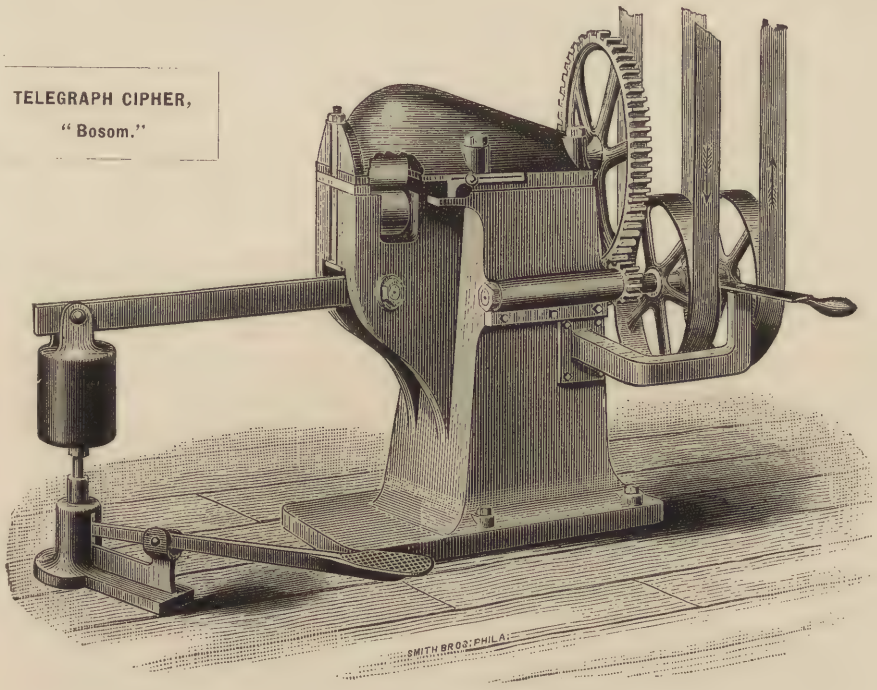


The Upsetting Machine shown in the cut is an indispensable tool for swaging the points of the teeth, and by its use the teeth are perfectly jointed, thus keeping the points of the teeth at a uniform distance from the back of the blade and causing each tooth to do its share of the cutting. It is a very effective tool, and makes a better shape tooth than can possibly be done by the hand upset, and in much less time.

Price, ... $

LONDON, BERRY & ORTON,
Atlantic Works. Philadelphia, Pa.

TELEGRAPH CIPHER,
"Bosom."



Patent Saw Stretching Machine.

To keep any saw in order the tension must be just right. This has been done by hammering, but a better plan is to pass the blade between hardened rolls, so that the plate will gradually be stretched or loosened just where it is required. The machine shown in the illustration has been designed especially for the purpose of rolling Band Saw Blades, and by its use a saw can be given exactly the tension necessary to fit it for its best work. The machine is completely under control of the operator, and the motion of the rolls can be reversed or the pressure taken off in a moment.

Hammer.



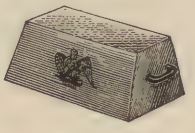
ATLANTIC WORKS.

LONDON, BERRY & ORTON,

Twenty-Second and Arch Streets,

PHILADELPHIA, U. S. A.

Anvil.

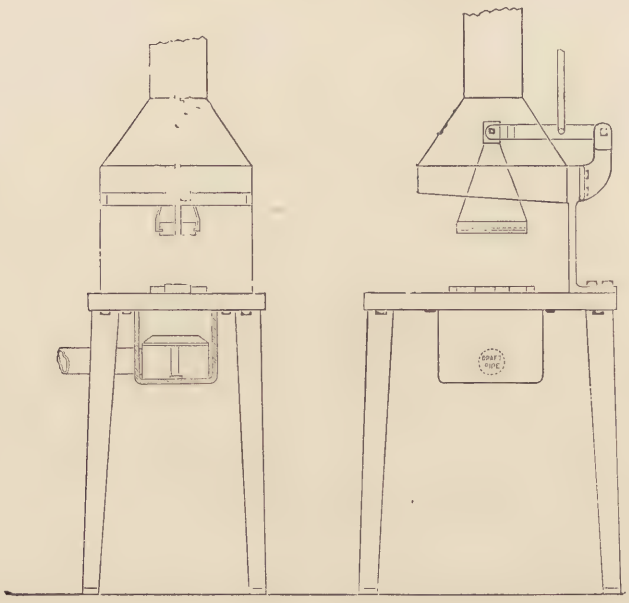




Steel Straight Edge.

The Saw-Makers' Anvil and Hammer are tools which should always be on hand for emergencies. No tool room is complete without them, as accidents sometimes occur that bring them into use.

Furnace.



Telegraph Cipher, "Botanist."

The Furnace shown in the cut is similar in construction to the form we use in our own shops, and we have found by experience that it is the best form for wide saws. Construction is so well shown in the cut that further explanation is not necessary.

Each Furnace is furnished with a blower complete.

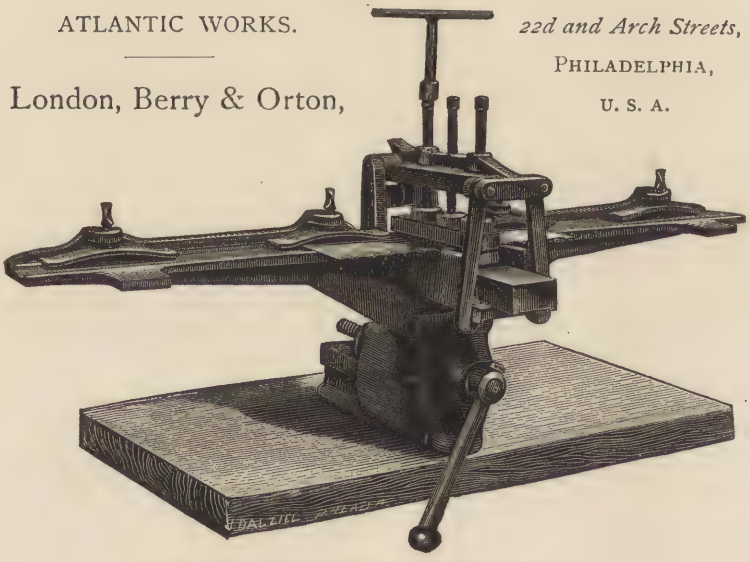
When used in connection with the scarfing frame shown below, will make brazing easy and perfect.

Brazing Clamp.

ATLANTIC WORKS. *22d and Arch Streets,*

London, Berry & Orton, PHILADELPHIA, U. S. A.

Telegraph Cipher, "Bounce."



The engraving shows a device for holding saws while Brazing.

Construction.—It consists of a long cast-iron frame, planed true on top and back. An opening is left in the centre to carry a wedge, on which rests the lower piece of hot iron. At either side of this opening are two lugs for thumb-screws to clamp the saw. On the top and over the centre is hung a bar, carrying three set-screws, and on one end two hooks, that, by their gravity, when the bar is closed, hook under the main casting, holding that end firm while the screws are set on the saw. The bottom has a flange to go in an ordinary bench-vise, as shown in cut.

Directions for Joining or Brazing Saws.

The ends of the blade should be filed to give a new surface, scarfing to about one-quarter the thickness at the ends, making the lap three-quarters of an inch long. Then with a piece of hard smooth steel (a round or half-round file, ground smooth, will do) rub across the ends and edges of the saw, bearing hard on the corners that are to lay together in forming the lap; this will turn a light feather-edge which, although perhaps not discernible to the eye, can readily be felt with the hand, and will prevent the silver, or Ajax metal, from running out. Rub the surface clean, using a rag or piece of clean paper with powdered borax, leaving no more borax on than will adhere to the saw. Place one end of the saw in under the two lugs at one side, so that the centre of the lap will come in the centre of the opening. The other end is placed under the lugs on the other side of the opening, leaving the lap directly over the end first placed. Next, take a piece of silver solder, or Ajax metal, that will cover the lap; clean it thoroughly with the rag and powdered borax, and place it in the joint. Next, take one of the pieces of wrought iron, 1 x 2 inches, and two inches longer than the width of the saw (that are now supposed to be heated to the proper heat), clean off the side that is to lay next the saw with a scraper, and lay it on the wedge in such a position that when the wedge is shoved in it will come directly under the joint. A helper should now have the other hot iron cleaned and ready to lay on the top of the joint. Then swing the set screw bar down, see that the hooks catch the frame and tighten down the three set screws on top. Leave in this shape until the irons are black, when the saw may be taken out. Clean off with a file, take it to the anvil and take out the tight places, after which finish dressing to proper thickness, using calipers, and in no case leave the joint thicker than the balance of the blade.

If these instructions are carried out to the letter we can guarantee a joint every time.

In heating the irons great care should be taken to heat them slowly and evenly to a good light red or nearly white heat, taking care not to burn them. The forge shown in the cut, with air furnished from a small power fan, gives a steady, even fire, and can be set close to where the saw is to be brazed and the iron heated while the joint is got ready.

Silver solder furnished, rolled to proper thickness, ... $2.00 per oz.
Ajax metal, rolled same, ... $1.00 " "

We prefer the Ajax, although it takes a little more heat to melt it than is required for silver solder.

London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.

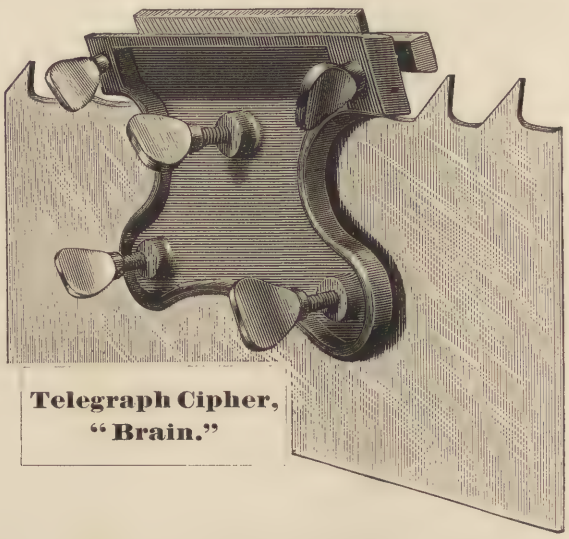
Side File.

This cut represents our Side File, for jointing the sides of Band-Saw Teeth, and when used in connection with our Upsetting Machine will put a saw in complete order for cutting.

Files.—A special one is furnished with the jointer.

Price of Holder, . . $2.00

Files, per dozen, . . 1.90



Telegraph Cipher, "Brain."

Send to London, Berry & Orton for Band-Saw Blades of the very best quality "Fire Temper." Any tooth, any width, any length, joined, filed and set, ready for use.

Band-Saws on Log Mills, when run off the band-wheels, are liable to be greatly damaged by being kinked or broken.

The Independence Saw-Catcher is attached to the saddle or bracket whereon the bearing for the upper wheel is supported, it is then adjusted with the wheel without further attention.

Saving a saw once or twice frequently pays for the Catcher.

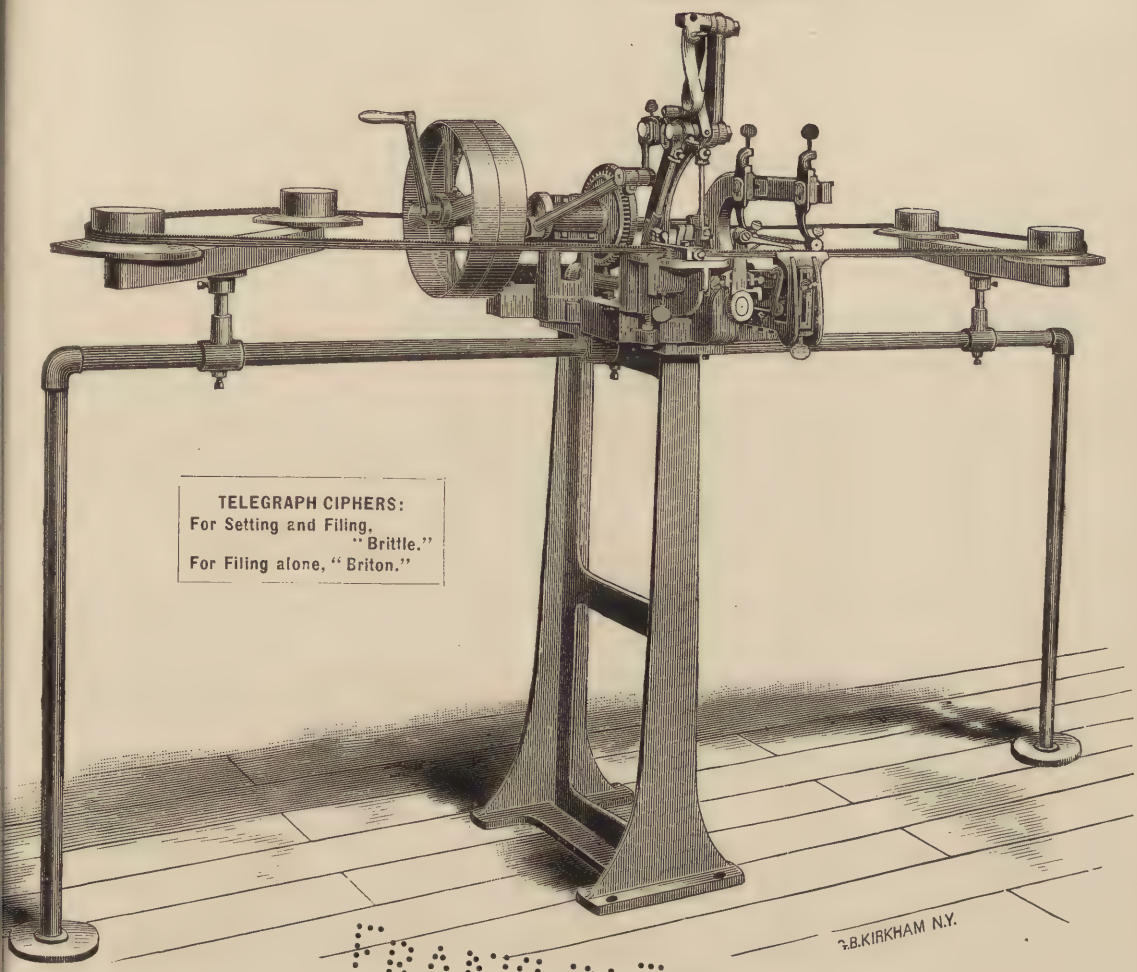


Independence Band-Saw Catcher.

Patented March 4, 1884.

London, Berry & Orton,

Atlantic Works. Philadelphia, Pa.



Power Band-Saw Setting and Filing Machine.

Any ordinary three-cornered file is used, which is easily fixed in position. It is no necessary to purchase special files, made of some particular design.

The file is used in the forward motion *only*, and can be adjusted to give any desired rake to the teeth.

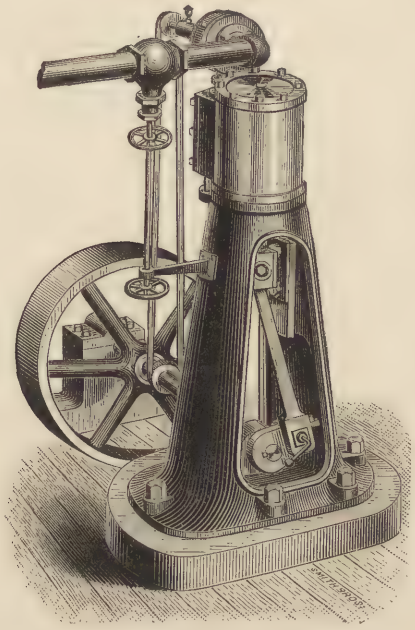
Band-Saws set and filed by this machine will last longer than those filed by hand, owing to the great regularity of the teeth. The setting being done by hammers on anvils having the desired angle, the teeth will stay at that angle after being struck, and do not spring back, as is often the case with teeth set by a cam motion. The amount of set required can be adjusted to the greatest nicety.

In this machine the same tooth that *is fed up is filed*, thus keeping the teeth of one regular pitch and height. This is an important feature, as the teeth of band-saws become very irregular through poor filing.

Simple in construction and operation, this machine can be worked by a boy. All the parts are accessible, and all the various adjustments quickly and easily made. The setting and filing are accomplished in the one machine and at one time, but, if desired, it will set or file separately.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.



TELEGRAPH CIPHERS:
10 x 12-inch Stroke, "Carbine."
12 x 12-inch Stroke, "Carat."

Vertical Steam Engines.

The engine shown in the engraving is built from the same patterns used for our combined Band Mill and Engine, and is an exceptionally well-built Plain Slide Valve Engine, suitable for general work or for driving Band-Saw Mills independently of the general motive power. We are prepared to furnish it in two sizes:

10-inch bore, 12-inch stroke.
12-inch bore, 12-inch stroke.

Attention is called to the following points:

The Column is unusually heavy and rigid. The Crank-Shaft is of forged steel. The Connecting Rod is of ample length. The Connecting Rod Ends are forged solid, no straps being used. The Piston Rod is of steel. The Guides are bored in line with the cylinder, insuring perfect and permanent alignment. The Reciprocating Parts are counterbalanced to such an extent as to insure smooth running. All the parts are fitted with the greatest care and best workmanship.

These engines will develop power as follows:

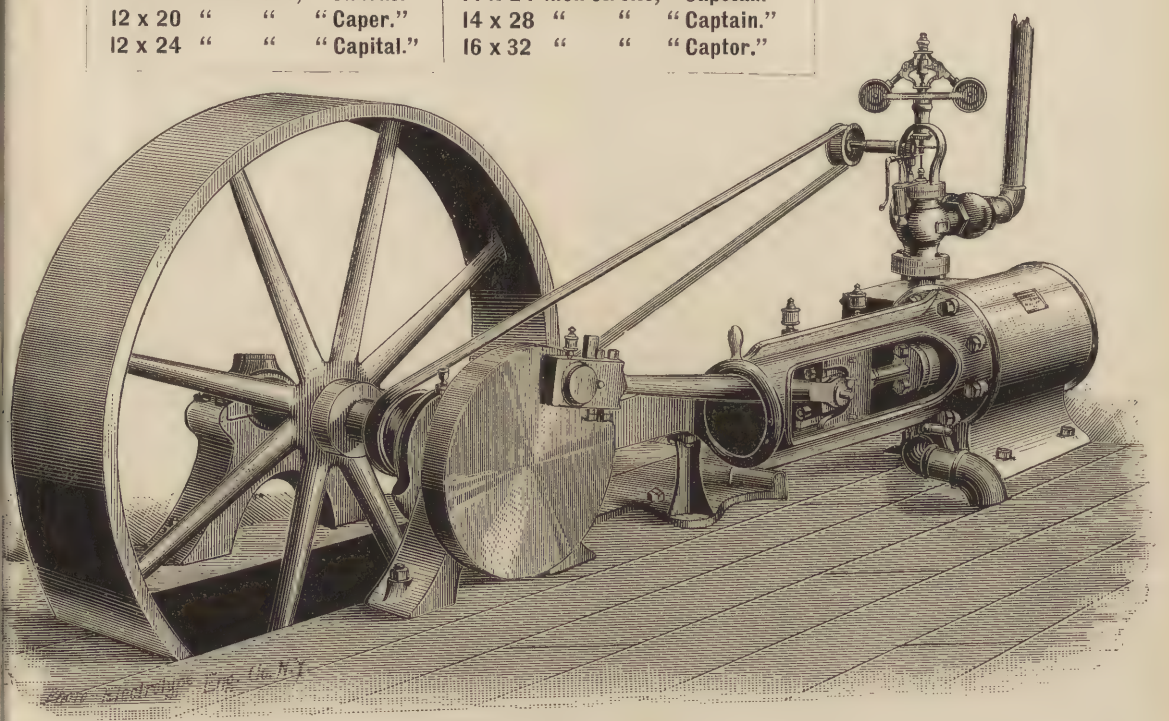
Mean effective pressure, 45 pounds.
At 150 revolutions per minute,
10-inch bore, 30-horse power.
12-inch bore, 45-horse power.
At 200 revolutions per minute,
10-inch bore, 40-horse power.
12-inch bore, 60-horse power.

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

TELEGRAPH CIPHERS:

10 x 16-inch stroke, "Canvas."	14 x 24-inch stroke, "Capstan."
12 x 20 " " "Caper."	14 x 28 " " "Captain."
12 x 24 " " "Capital."	16 x 32 " " "Captor."



FRONT VIEW OF ENGINE.

DETAILS OF CONSTRUCTION.

The Cylinder is made of a special mixture of machinery scrap and new iron, which form an exceedingly close-grained and durable material. The ports are made as large, short and direct as practicable from each end of the cylinder, for the purpose of reducing the clearance to a minimum. The exhaust ports are in each end, so that the exhaust steam is quickly conveyed away, avoiding the usual condensation from that source. The ports are also made low, to provide against loss from clearance, and to bring about the compression necessary for smooth running without distorted valve motion.

The Valve is faced and scraped on both sides, steam tight, is in wedge form, and is carried between the cylinder face and the cover plate in such a manner that it does not rest on the lower edge, and to allow self-adjustment of wear of the valve; consequently, it moves with perfect freedom and just enough friction to keep surfaces bright and prevent corrosion from starting leaks. Valve has been in use for seven years, and has given entire satisfaction.

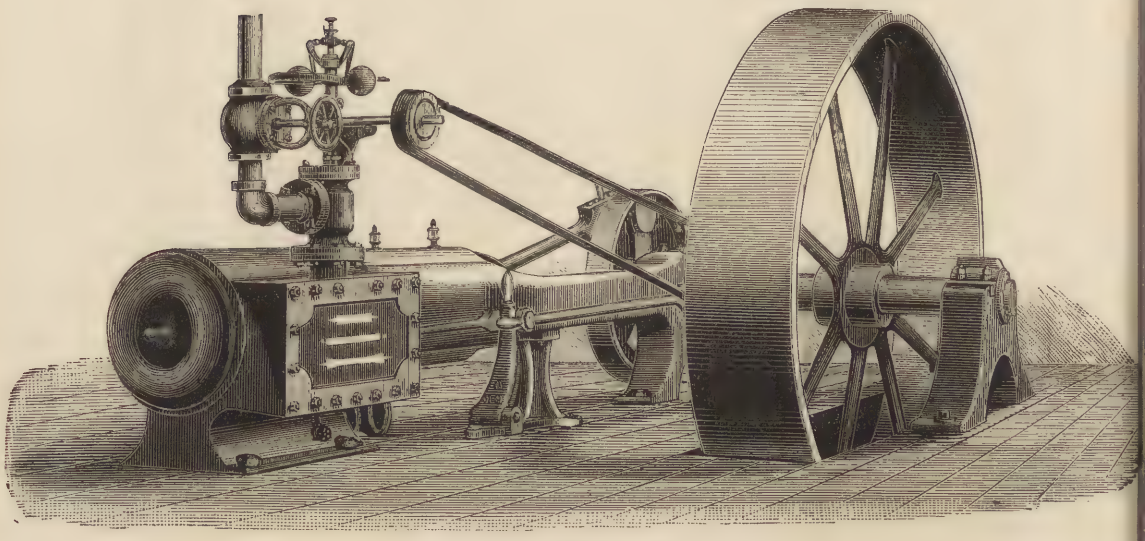
Bed Plate.—The general design is seen in the engravings. The distribution of metal being such as to give it a good appearance and, at the same time, to convey the strains in the most direct manner possible.

The Guides are cylindrical in form, which are bored, and end of frame faced at one and the same setting in line with the bore of the cylinder, this giving *certain* alignment and great stiffness.

The Cross Head is of an improved design, which is claimed to be more easily adjusted. Besides having other advantages superior to those heretofore employed on this style of engine, it is made solid and is firmly fitted to piston rod by being bored and threaded with jam-nut attached. The gibs are turned and fitted to guides and adjusted by taper keys, and securely held in place by set screws.

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Atlantic Works. Philadelphia, Pa.



BACK VIEW OF ENGINE.

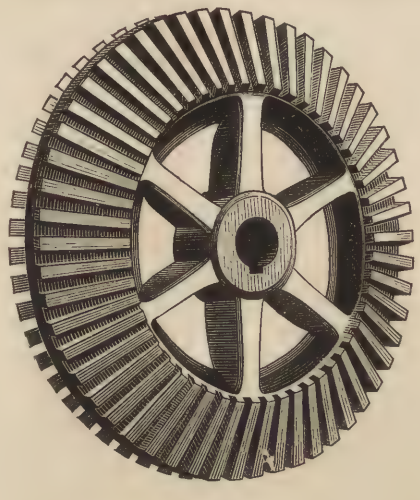
The Connecting Rod is made of the best hammered iron, and is provided with strap, bolts and key at crank end, cross-head end with fork or jaw, and is arranged with movable pin fitted in and dowled. The advantage of the movable pin is the fact that it can be removed for repairs, or a new one substituted at any time at a trifling expense.

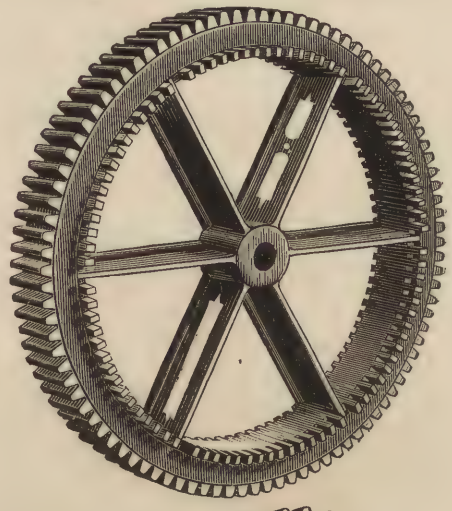
The Crank is of disc form, in which the reciprocating parts are counterbalanced, so as to accomplish the best results and insure smooth running of the engine. The Crank-Shaft is of the best hammered iron.

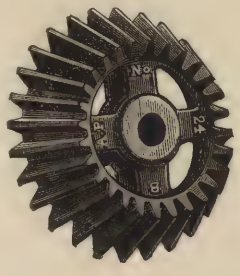
The Eccentric Rod and Hook is made of hammered iron, and the drop hook is provided with suitable means of adjustment of wear without changing the length of the rod, and from which the hook can easily be connected or disconnected.

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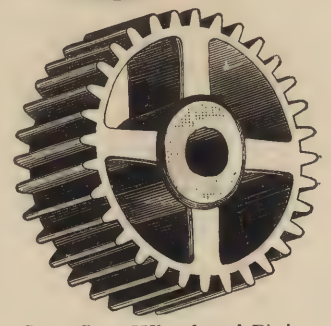






We are under obligations to the Walker Manufacturing Co. of Cleveland, Ohio, for the following:

2200 feet per minute at pitch line of iron gearing, and 3000 feet for wood and iron, are excessive velocities, and should be avoided if possible.



Bevel Core Wheel and Pinion.

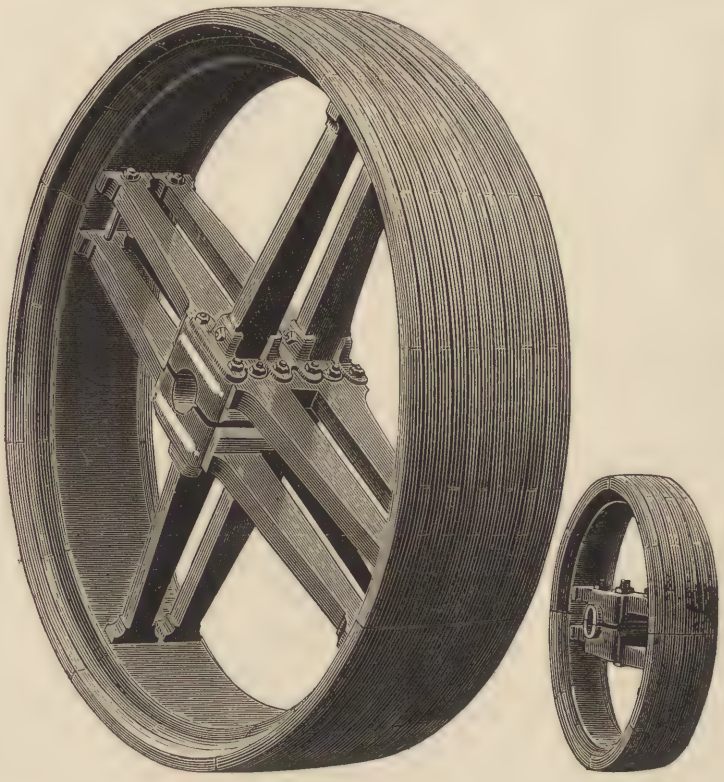
Spur Core Wheel and Pinion.

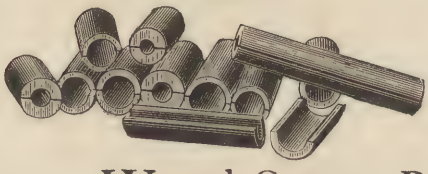
Horse Power of Gearing.

Pitch in inches.	Face in inches.	Velocity Ft. per min.	H. P.	Pitch in inches.	Face in inches.	Velocity Ft. per min.	H. P.	Pitch in inches.	Face in inches.	Velocity Ft. per min.	H. P.
1	2½	100	1.40	3¼	9½	100	17.37				
1⅛	3	100	1.90	3½	10½	100	20.92				
1¼	3½	100	2.52	3¾	11	100	23.48				
1⅜	4	100	3.11	4	12	100	27.35				
1½	4½	100	3.84	4½	14	100	35.98				
1⅝	5	100	4.33	5	16	100	45.58				
1¾	5½	100	5.48	5½	18	100	56.21				
1⅞	5½	100	5.90	6	20	100	68.37				
2	6	100	6.83								
2⅛	6½	100	7.90								
2¼	7	100	8.98								
2⅜	7	100	9 51								
2½	7½	100	10.70								
2⅝	7½	100	11.27								
2¾	8	100	12.62								
2⅞	8½	100	13.97								
3	9	100	15.27								

London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.

Every Pulley a Split Pulley.



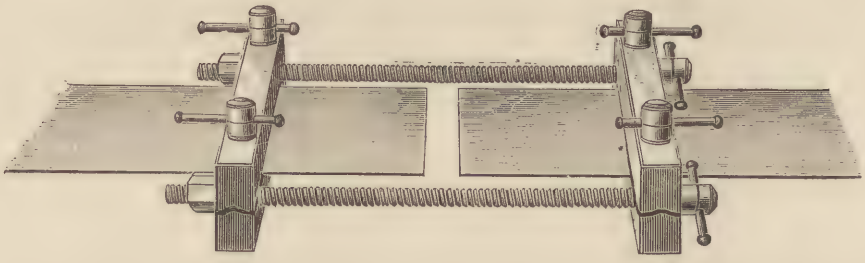


In comparing prices on pulleys, please note carefully the following:

1st. Our list is lower than most others.
2d. Every Pulley is a Split Pulley.
3d. Every Pulley is guaranteed to transmit from 25 to 60 per cent. more power than Iron, with same tension of belt.
4th. They are 70 per cent. lighter than Iron Pulleys.
5th. The fastening does not mar the shaft.
6th. Can be used on different sizes of Shaft.
7th. They are in Perfect Balance.
8th. They are the most thoroughly made Wood Pulley in the world.
9th. Are the Handsomest Pulley on the Shaft ever made.
10th. No chances to take, every Pulley guaranteed as represented or no sale. Order a Sample Pulley, after which you will have no other.

☞ All of our Wood Split Pulleys are sufficiently strong for the heaviest double leather belts made.

Wood-Screw Belt Clamp.

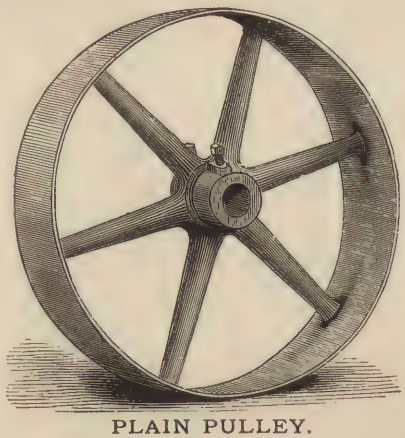


The Frame is made of Rock Maple. The Screws are all made of second-growth White Maple or Hickory, which we always send unless otherwise ordered; but make Hickory Screws, if preferred.

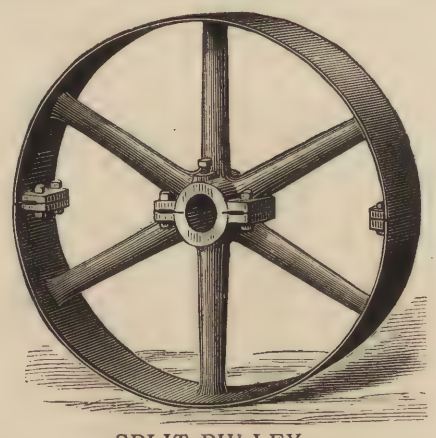
These Clamps are used for tightening and putting together Large Belts, and are the best Belt Clamps made; combining simplicity, strength and convenience. No manufacturer can afford to do without them, as once taking up a Belt frequently saves their cost.

The rapidity of a Wood-Screw over Iron (thread) is very apparent.

No. 170. For 6 to 14 Inch Belts, each, $4 00.
No. 171. " 12 to 18 " " " 4 50.
No. 172. For 18 to 24 Inch Belts, each, $5 50
No. 173. " 24 to 36 " " " 7 00



PLAIN PULLEY.



SPLIT PULLEY.

Our Pulleys are of the most approved style, being light, symmetrical and strong, and are fitted with steel-pointed set-screws. For a shifting belt, the pulley must be turned straight on the face, and with a rounding face, for a belt not shifting. For loose and tight pulleys, the face of each should be rounding. When orders are received for pulleys, and no description given, rounding face will be sent. In ordering pulleys be careful to give full particulars, thus:

24 x 6, bore $1\frac{15}{16}$, straight face.
24 x 6, bore $1\frac{15}{16}$, rounding face.

Rules for Determining the Size and Speed of Pulleys or Gears.

The driving pulley is called the Driver, the driven pulley is called the Driven. If the number of *teeth in Gears* are used instead of diameters in these calculations, then number of teeth must be substituted wherever diameter occurs. To determine the diameter of Driver, the revolutions of the Driver; the diameter and revolutions of the Driven being given.

Answer.—Multiply the diameter of the Driven by its revolutions and divide by the number of revolutions of the Driver.

To determine the diameter of Driven, the revolutions of the Driven, the diameter and revolutions of the Driver being given.

Answer.—Multiply the diameter of Driver by its revolutions and divide by the revolutions of the Driven.

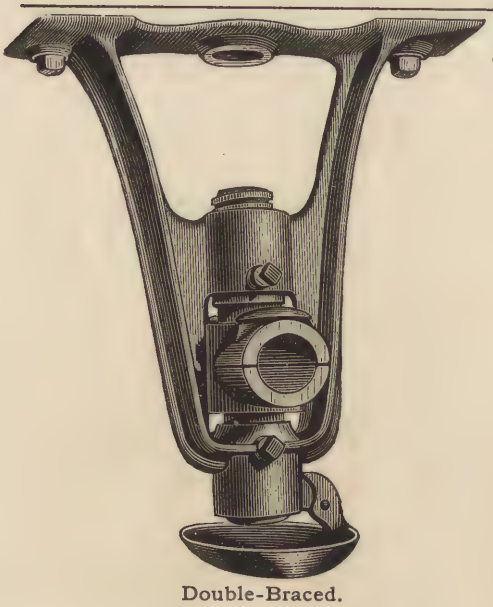
To determine the revolutions of the Driver, the diameter and revolutions of the Driven, and diameter of the Driver being given.

Answer.—Multiply the diameter of the Driven by the revolutions of same and divide by the diameter of the Driver.

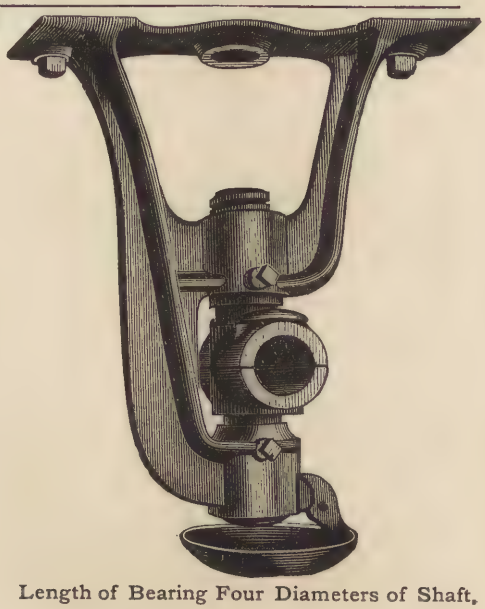
To determine the revolutions of the Driven, the diameter and revolutions of the Driver, and diameter of the Driven being given.

Answer.—Multiply the diameter of Driver by the revolutions of same and divide by the revolutions of Driven.

London, Berry & Orton,
ATLANTIC WORKS. Philadelphia, Pa.



Double-Braced.



Length of Bearing Four Diameters of Shaft.

Ball and Socket Hangers.

Remarks on Line Shafting.

The engraving on this and the opposite page show views of standard fittings, such as we recommend for high speed shafts to drive machinery for working wood. The bearings are all pivoted, so as to adjust to position, and are movable vertically for leveling.

When compression couplings are used, the double-braced hanger is recommended; but with solid flange couplings, we prefer the hanger open at one side. Our post-hangers are furnished open at the side, or double-braced, as shown.

There are certain requirements belonging to Line Shafts, especially those employed for driving Wood-Working Machines, which can be summarized as follows:—

(1.) The shafts and all running parts should be so accurately made and balanced, that not the least jar will be communicated to floors or buildings to which attachments are made.

(2.) The bearings should be long enough, so that the pressure will never exceed 50 lbs. for each inch of bearing area, and of material to withstand a surface speed of 250 feet in a minute without wearing or heating.

(3.) The bearings should be pivoted, so as to adjust themselves to the line of the shaft, and thus receive an equal pressure over the surface to accommodate the unavoidable deflection caused by the strain of belts.

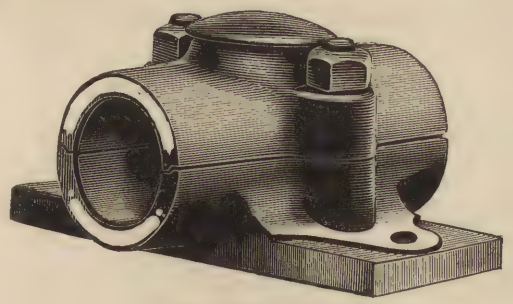
(4.) The bearings should be arranged with adjustment in two planes, so that a shaft may at any time be set in line without trouble or expense.

(5.) Couplings should be constructed so as to suit any piece of shaft of uniform diameter without special fitting, should act independently on each of the coupled ends, and be adjustable, so as to be readily removed when pulleys are to be put on or taken off.

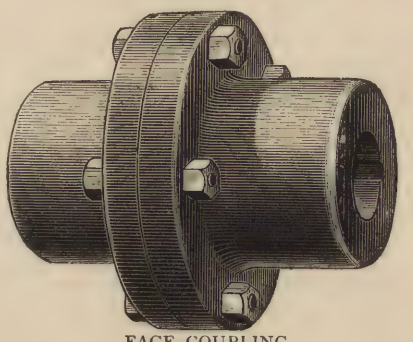
All these conditions specified come within what is done in the best modern practice, and shafts thus constructed can be suspended overhead as well as placed in pits and attached to masonry. In wood-working factories, except for the large machines, such as timber saws, it is always more safe, convenient, and inexpensive to place Line Shafts overhead. The tendency in practice is, however, so uniformly towards this plan, that it scarce requires remark.

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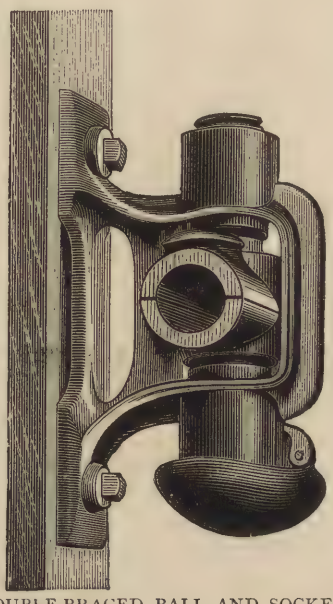
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RIGID PILLOW BLOCK.



FACE COUPLING.
Length about four Diameters of Shaft.



DOUBLE-BRACED BALL AND SOCKET POST HANGERS.

The principal arguments in favor of placing Line Shafts in pits or on masonry generally relate to such shafts as are not fit to be mounted on a floor or building. A Line Shaft, as much as any other kind of machinery, should be accessible, and placed where it may be seen and watched. If placed out of sight, and especially beneath a floor, it becomes a source of danger and risk, and in some cases causes extra insurance. Another objection to under-floor shafts is, that, unless Machines are placed nearly over the shafts, the belts pass off at a low angle horizontally, and cause obstruction as well as danger to workmen; on the contrary, belts coming down from overhead shafts seldom cause either danger or obstruction.

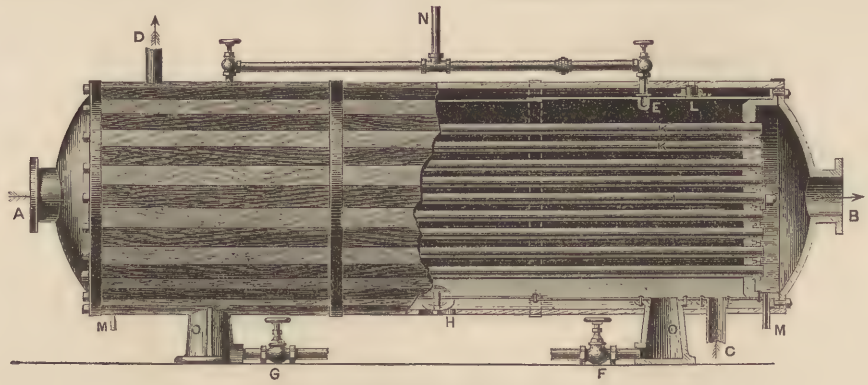
In the case of large heavy shafts, it is of course best to place them on masonry when practicable; but even in that case, the bearings should be pivoted if the speed is great. Large shafts so mounted can be less expensive than if made to be suspended; but the rule will not apply for such sizes as are generally employed to operate wood-working Machines.

Shafts of 3½ inches or less in diameter, with their fittings, have now become an article of regular manufacture, by means of a system which permits a duplication of parts, and the price demanded for the most improved fittings is no more than was formerly paid in this country for the cumbrous, inconvenient hangers and couplings sold by the pound. In respect to Line Shaft fittings, their value cannot be fixed by weight any more than in the case of a Machine. This mode of estimating is, in fact, less applicable to shafts, because unnecessary weight in a Machine may not be an objection, but is so in the case of couplings or pulleys. It may also be remarked that, in proportion to weight, there are but few Machines which involve so much labor and expense as shaft fittings, yet no one sells Machines by the pound.

The power which is lost in driving imperfectly made shafting, and other transmitting gearing is seldom suspected until tests are applied; and every one in erecting a factory should very carefully consider this matter, not only in respect to loss of power, but safety and convenience also.

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ATLANTIC WORKS. Philadelphia, Pa.



Patented June 15, 1880, and June 20, 1882.

Brass Tube Feed-Water Heater and Purifier.

THE EXHAUST STEAM PASSES THROUGH THE BRASS TUBES.

THE FEED-WATER IS IN THE BODY OF THE HEATER AND SURROUNDS THE TUBES.

The above cut represents the most perfect device in use for utilizing the exhaust steam of engines to heat and purify the feed-water before entering the boilers.

All steam users and those intending to erect steam machinery should thoroughly investigate its merits before purchasing elsewhere, as it is sold on as liberal terms as any other make of Heaters. Its use insures a greater saving of fuel and better protection to boilers than any other, and it is sold on a full guarantee to perform as represented.

Items for Steam Users and Engineers to Consider.

This Heater will cause the removal of all scales in boilers and prevent new from forming. It can be blown out, washed out, and filled up without stopping the engine.

Water at boiling point not only saves a large percentage of fuel, but a great deal of wear-and-tear of boilers, and should never enter the boilers cold.

The combined area of tubes in all the heaters is greater than the area of the exhaust of the engine, which precludes the possibility of back pressure.

In this device steam and water do not come in contact, hence no grease or other impurities from the engine enter the boiler, and the chances for explosions of boilers are reduced by having them clean.

The feed-water is pumped cold, and therefore not limited in temperature, as is the case with all Open or Pan-Heaters.

It saves boiler repairs, and the expense and annoyance of removing scales from the boilers are overcome after they are once made clean.

Only a portion of the exhaust steam is utilized; the remainder can be used for heating buildings or any purpose for which exhaust steam may be required.

All Heaters are ready for water and steam connections when shipped, and any engineer can put them in position and make all the necessary attachments.

Please state the size of engine, revolutions per minute, and boiler pressure when asking for prices, which will be quoted on application. Heaters kept in stock for immediate delivery.

For full particulars or prices, address

London, Berry & Orton,

ATLANTIC WORKS. Philadelphia, Pa.

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